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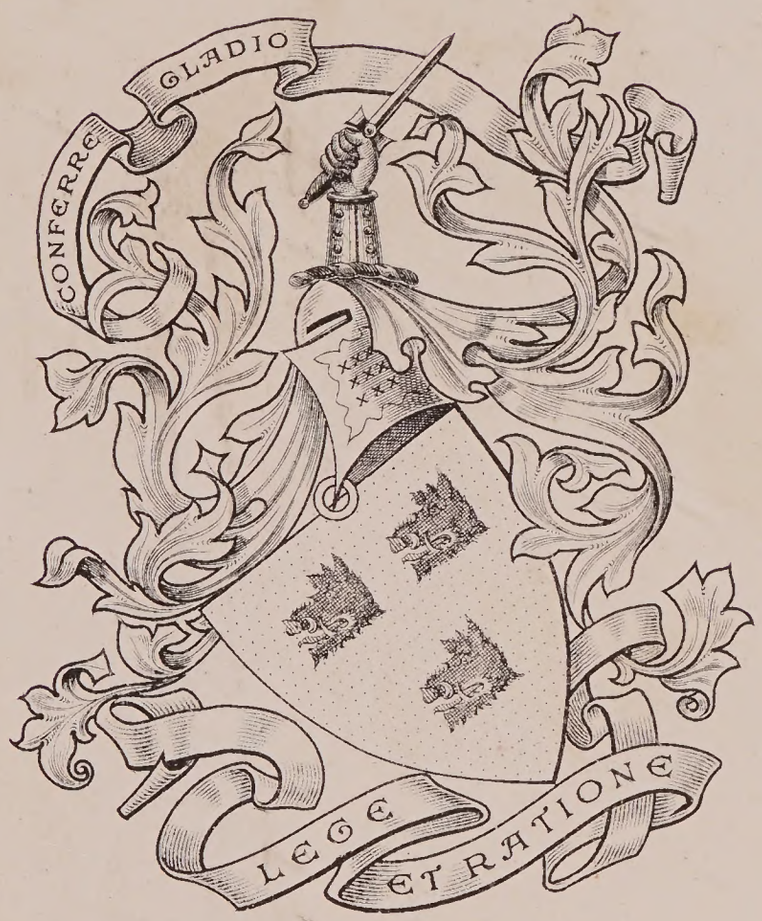

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AND

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JULY, 1895.

ON THE RENDERING OF ANIMALS IMMUNE AGAINST THE VENOM OF THE COBRA AND OTHER SERPENTS; AND ON THE ANTIDOTAL PROPERTIES OF THE BLOOD-SERUM OF THE IMMUNISED ANIMALS.*

BY PROFESSOR THOMAS R. FRASER, M.D., LL.D., F.R.S., DEAN OF THE FACULTY OF MEDICINE, UNIVERSITY OF EDINBURGH.

ONE of the most striking and interesting of the many traditions and current beliefs regarding venomous serpents is that a power may be acquired of freely handling them without injury, and even of successfully resisting the poisonous effects of their bites.

The Psylli of Africa, the Marsi of Italy, the Gouni of India, and other ancient tribes and sects, were stated to have been immune against serpents' bites, and to have been able to exercise a remarkable influence over even the most venomous of these animals; and those attributes have been explained on the supposition that serpents' blood was present in the veins of the members of these tribes and sects.

In more modern times, and, indeed, at the present day, the same belief is stated in the writings of travellers; and it has been expressed by poets and novelists, and among the latter, with a half-admitted conviction of its reality, by Wendell Holmes, in his "Romance of Destiny."

In "A New and Accurate Description of the Coast of Guinea," published in 1705, by William Bosman, an account is given of the great "reverence and respect" of the negroes for snakes; in connection with which the following statements are made:—"But what is best of all, is, that these

* Communicated to the Royal Society of Edinburgh, June 3rd, 1895.

idolatrous snakes don't do the least mischief in the world to mankind; for, if by chance in the dark one treads upon them, and they bite or sting him, it is not more prejudicial than the sting of millepedes. Wherefore, the natives would fain persuade us that it is good to be bitten or stung by these snakes, upon the plea that one is thereby secured and protected from the sting of any poisonous snake. But here," he proceeds to remark, "I am somewhat dubious, and should be loth to venture on the credit of their assertions, because I have observed that the gods themselves are not proof against these venomous serpents, much less can they protect us against their bite."

Drummond Hay, in his work on Western Barbary, gives a description of the performances of four members of a sect of snake-charmers, called the Eisowy, who freely handled, and allowed themselves to be bitten by serpents proved to be venomous by a rapidly fatal experiment performed on a fowl. At the termination of the exhibition, the Eisowy, apparently as a usual performance, "commenced eating or rather chewing" a poisonous snake, "which, writhing with pain (to quote Mr. Hay's words) bit him in the neck and hands until it was actually destroyed by the Eisowy's teeth." He states that, on another occasion, at Tangier, a young Moor, who was witnessing the performances of a snake-charmer, ridiculed his exhibition as a delusion, and having been dared by the Eisowy to touch one of the serpents, the lad did so, was bitten by one of them, and shortly afterwards expired. In connection with my subject, a special interest is attached to the account given by Mr. Drummond Hay, and repeated in its main features by Quedenfeldt in the *Zeitschrift für Ethnologie* of 1886, of the origin of this Eisowy sect, and of the immunity which they claim. The founder, Seedna Eiser, was being followed through the desert of Soos by a great multitude, who, becoming hungry, clamoured for bread. On this, Seedna Eiser became enraged, and turning upon them he uttered a common Arabic curse which means "eat poison." So great was their faith in the teaching of the saint, that they acted upon the literal interpretation of his words, and thereafter ate venomous snakes and reptiles; and from that time they themselves and their descendants have been immune against serpents' bites.

In the writings of many other travellers similar evidences may be found of a belief in the possession of a power successfully to resist the poisonous effects of serpents' bites. The same belief presents itself in the conviction, prevailing in

several parts of the world, that a non-fatal bite by a poisonous serpent, provided marked symptoms have followed, confers protection against subsequent bites ; and in the tales of the performances by the snake.charmers of the present time. These performances have been graphically described, among others, by Hooker and Ball in their *Journal of a Tour in Morocco and the Great Atlas*, but only to be dismissed as impostures, rendered possible by the previous extraction of the poison-fangs, or by some other disabling operation. Although, possibly, the performances are at times, or even frequently, impostures, it almost appears as if this conclusion were arrived at more because of their improbability and their apparent defiance of knowledge regarding the effects of serpents' venom, than because of satisfactory or sufficient proof having been obtained of the conclusion. Some of the facts which I shall bring before the Society will, on the other hand, show that this conclusion can no longer be justified on the ground that the asserted facts imply impossibilities.

It may be instructive to associate with this belief in the possession, under certain conditions, by human beings of a power successfully to resist the poisonous effects of serpents' venom, and with the evidences in its support, the further belief that venomous serpents are themselves protected against the effects of bites inflicted upon them by individuals both of their own and of other species. On mere anatomical grounds it is difficult to understand how serpents could escape the absorption of their own venom through mucous surfaces, even admitting that absorption of venom does not occur in normal conditions of these surfaces. Venom must, however, be so frequently introduced into their bodies, in situations where absorption could not fail to occur, by the bites inflicted upon them by other serpents, that the conclusion seems inevitable that they possess some protective quality, without which, probably, no venomous serpents would now be in existence. Not only have many general observations been made in support of this belief, but it has been proved to be correct by direct experiments, such as those made by Fonatana of Tuscany, more than a century ago, and by Guyon, Laçerda, Waddell, Kaufmann, and Sir Joseph Fayrer.

This, and other evidence, pointing to the existence of protection against venom, not only in serpents themselves, but also, in certain exceptional circumstances, in human beings, several years ago originated a wish to further investigate the matter. It was obviously suggested that if protection occurs, it must be caused by some direct result of the

absorption of venom; and, therefore, that its existence could be proved or disproved by experiment. In the former event, the steps would already have been taken to obtain, by further experiments, results likely to be of value in the treatment of poisoning by serpents' venom; and, indeed, likely to be of importance in even the wider field of general therapeutics.

With these objects endeavours were made to collect a sufficient quantity of venom; but the collection has proceeded but slowly, and only after several years has a supply gradually been accumulated sufficiently large to render it probable that definite results would be obtained before the supply of venom had become exhausted in the experiments.

I received my first supply of cobra venom in 1889, from Surgeon-Colonel Moir, lately of Meerut, and soon afterwards —also in small quantities—from the late Dr. Shortt, of Madras, and from Sir Joseph Fayrer, the Thakore of Gondal, and Dr. Phillips. Larger quantities were subsequently obtained from Surgeon-Captain French, and through the kind efforts of Sir William Mackinnon, Director-General of the Army Medical Department, from each of the Presidencies of India; and they had so far increased my stock as to enable me to begin experimental work towards the end of last year. Early in this year a large additional supply was received from Surgeon-Colonel Cunningham, of Calcutta, and this gentleman has quite recently sent a further large quantity of several grammes of dry venom.

But, besides these specimens of the venom of the cobra of India, I have also been fortunate in obtaining specimens of venoms from other parts of the world.

From America, Dr. Weir Mitchell, of Philadelphia—whose work on the chemistry and physiology of serpents' venom constitutes the great advance of the century on the venom of viperine serpents—has supplied me with the venom of three species of rattlesnakes—viz., *Crotalus horridus*, *C. adamanteus*, and *C. durrisus*, and also with a specimen of the venom of the Copper Head (*Trigonocephalus contortrix*).

From Australia, Dr. Thomas Bancroft, of Brisbane, has at various times sent specimens of the venoms of the black snake (*Pseudechis porphyriacus*), the brown snake (*Diemenia superciliosa*), and of a large unidentified snake of the Diamantina district of South Australia (probably a new species of Diemenia).

From Africa, the kindness of Mr. Wm. Smith, a distinguished naturalist of Cape Town, of Dr. Brook, of the Orange Free States, and of Dr. John Murray and Mr. Van

Putten, of Cape Colony, has placed at my disposal small quantities of the venom of the puff adder (*Vipera arietans*), the night adder (*Aspidelaps lubricus*), the yellow cobra (*Naja haie*), and the "Ring Hals Slang" or "Rinkas" (*Sepedon hæmachates*); and Dr John Anderson, formerly Professor of Natural History at Calcutta, has only last week forwarded to me living specimens of the *Vipera cerastes*, to be followed by living specimens of the cobra, which his present connection with the zoology of Egypt has given him peculiar facilities to obtain.

In the meantime, however, further evidence has been obtained in support of the reality of the probabilities to which I have referred. Sewall, using the venom of the rattlesnake, Kanthack that of the cobra, and Kaufmann and Phisalix and Bertrand that of the viper, obtained experimental evidence of the possibility of producing by "inoculation" a certain slight degree of resistance against the toxic effects of these venoms. The relationship of such observations to the recent discoveries in connection with the toxines of tetanus, diphtheria, and other diseases, could not long remain unrecognised. Dr. Bancroft and others have recently suggested "that the blood of animals rendered immune to snake venom might be found of service as a remedy in snake-bite." Within the last few months, Phisalix and Bertrand have obtained experimental indications of the antidotal power of the blood-serum of animals immunized, but only to a low degree, against the venom of vipers; and Calmette, working in the Pasteur Institute of Paris, after several unsuccessful endeavours had led him to express the opinion that immunity against snake venom could not be produced, afterwards succeeded in obtaining evidence of its production, and of the power of the blood-serum to counteract the effects of venom.

In the case of many of the venoms which I have had the good fortune to obtain, the quantity at my disposal was not sufficient for experimental examination on the plan that seemed desirable, and, besides, the examination of each of them would require several months of work. In this, the first portion of the investigation, therefore, the venoms that have been used are only four in number, those namely of the cobra of India (*Naja tripudians*), of the *Crotalus horridus*, or rattlesnake of America, of a large colubrine snake, probably a species of *Diemenia*, from South Australia, and of the *Sepedon hæmachates* of Africa. The venoms are therefore those of the most deadly of the poisonous serpents of Asia, America, Australia, and Africa respectively; and further, they are

representative of the chief differences that occur in the composition and action of venoms, for they are derived from members of the two great groups of the colubrine and viperine serpents.

My supply of cobra venom being much larger than that of any of the others, this venom was chiefly used in the experiments; and in all of those to be referred to, the administration was effected by subcutaneous injection.

An essential preliminary to exact investigations with active substances must always be the determination of the activity of the substances. The only convenient method for doing this is to define the smallest dose capable of producing death for any given weight of animal—that is, the minimum lethal dose. The venoms in their natural state are inconstant in activity, mainly because of variations in the quantity of the water which they contain. The cobra venom has, however, nearly always been received in the form of a dry solid; but when this was not so, it has been dried *in vacuo* over sulphuric acid.

Outside of India, there are few persons skilled in the hazardous task of taking venom directly from living serpents. Accordingly, with a few exceptions, the other venoms were not received in a pure form, but in the form of the dried venom glands. From these glands, however, the poisonous constituents may easily be extracted with water, and on evaporating the solution over sulphuric acid an active dry venom was obtained, containing, however, other substances besides those which are active. I am not in a position, therefore, to make any statement in regard to the relative activity of the different venoms. For the objects in view, what only is necessary is that the exact minimum lethal dose of each venom used should be known, whether it be pure or diluted with a certain small amount of inert matter.

Each of the four venoms was, however, found to be very active, but the cobra venom especially so,—a part of the difference between its activity and that of the other venoms being, no doubt, due to the above circumstances.

Experiments were made with it on several animals—as the guinea-pig, rabbit, white rat, cat, and the innocuous grass snake of Italy (*Tropedonotus natrix*). Very considerable differences were found to occur in the minimum lethal dose for each of these animals. For the guinea-pig the minimum lethal dose per kilogramme was .00018 grm.; for the rabbit, .000245 grm.; for the white rat, ·00025 grm.; for the cat somewhat less than ·005 grm.; and for the grass snake the

relatively larger dose of ·03 grm.* Cobra venom thus takes a position among the most active of known substances, rivalling in its lethal power the most potent of the vegetable active principles, such as aconitine, strophanthin, or acokantherin.

These facts having been ascertained, attempts were next made to render animals proof against lethal doses, by administering to them a succession of gradually increasing non-lethal doses. These were, for the first few doses, in some of the experiments one-tenth of the minimum lethal, in others one-fifth, in others one-half of the minimum lethal, and in others almost as great as the minimum lethal. At varying intervals the doses were repeated, and by-and-by gradually increased, until the actual minimum lethal had been attained. The subsequent doses, by gradual increments, exceeded the minimum lethal, and after five or six times the minimum lethal had been reached, it was found that the increments could be increased, so that each became twice, four times, and latterly even five times the minimum lethal, and still the animal suffered little, and, in many cases, no appreciable injury.

This brief statement, however, does not represent the experimental difficulties that were encountered. It describes the course of events in the altogether successful experiments. Non-success, however, was frequent, and many failures occurred before experience indicated the precautions and conditions that are necessary for success.

Serpents' venom exerts what may broadly be described as a duplex action. It produces unseen functional disturbances, and it also produces visible changes. The latter are of a highly irritative character, causing intense visceral congestions in the lungs, kidneys, and other organs, and, when given by subcutaneous injection, on all the structures of the skin and adjacent parts. There are apparently also some definite changes produced in the blood, with regard to which several important facts have been discovered by Dr. Martin, of the University of Sydney. Irritative effects are obviously produced by cobra venom, even in non-lethal doses, and with greatly increased virulence by doses that exceed the minimum lethal; but, in respect to this action, the other three venoms used are greatly more active than the venom of the cobra. Evidence was obtained to indicate that in the process of immunization, a diminution occurs in the intensity of these

* Guinea-pig, nearly 1/5 millig.; Rabbit, nearly ¼ millig.; White Rat, ¼ millig.; Kitten (6 weeks), 2 millig.; Cat, 5 millig.; Grass Snake, 3 centig.

local actions; but this diminution does not proceed so rapidly as that in the unseen functional or other changes which are the more direct causes of death; and, further, the local irritative changes, after having been produced, are slower to disappear than the unseen functional disturbances. Until these facts had been appreciated, and, indeed, even with the adoption of precautions suggested by them, frequent failures occurred. The apparently contradictory results accordingly were obtained of the production, by gradually increasing doses, on the one hand, of a protection against quantities much above the minimum lethal, so perfect that no apparent injury was caused; and, on the other hand, of an intolerance so decided that death was produced by the last of a succession of gradually increasing doses, no one of which was so great as the minimum lethal. The latter unfortunate event was frequently displayed in guinea-pigs, and attempts to carry immunization in them to a high point were found to be extremely difficult.

Notwithstanding these difficulties, however, such gratifying results have been obtained as that rabbits could at last receive, by subcutaneous injection, so much as ten, twenty, thirty, and even the remarkable quantity of fifty times the minimum lethal dose, without manifesting any obvious symptoms of poisoning.

Almost the only observable phenomena were a rise in the body temperature, which continued for a few hours after the injection, and which contrasts with the fall that occurs, after the administration of even non-lethal doses, in non-protected animals; and a loss of appetite, which usually, though not invariably incurred, and was probably the cause of a temporary fall in weight during the day or two days succeeding such injection. On the other hand, during the process of successful immunization, the animals increased in weight, they fed well, and appeared to acquire increased vigour and liveliness. This has been frequently exemplified in the smaller animals, such as rabbits; and also, very conspicuously, in an aged and previously sedate horse, which, in the process of immunization has now received ten times the estimated minimum lethal dose.

It is marvellous to observe these evidences of the absence of injurious effects, and even of the production of benefit in an animal which, for instance, has received in one single dose a quantity of venom sufficient to kill, in less than two hours, fifty animals of the same weight, and in the course of five or six months a total quantity of venom sufficient to destroy the

lives of 370 animals of the same species and weight. There are few facts in the whole range of biology more calculated to arrest the attention or produce astonishment in the mind of the observer!

With the cobra venom, I have also immunized cats, both by subcutaneous and by stomach administration; but the significance of the latter method of administration must be reserved for a future communication. As I have stated, a horse is also being immunized; and I have to express my obligations to Professor Williams for granting me the accommodation of their establishment, and to Professor Davis, M.R.C.V.S., also of the New Veterinary College, for much valuable assistance.

Following the same plan of research with the three other venoms, it was found that the minimum lethal dose per kilogramme for rabbits of the Diamantina venom* is ·0015 grm. per kilogramme, of the venom of *Sepedon hæmachates*, ·0025 grm.; and of the venom of Crotalus ·004 grm. The Crotalus venom is, in its purity, altogether comparable with the cobra venom; and the determinations, therefore, show that cobra venom is sixteen times more powerful than Crotalus or rattlesnake venom. This venom, as well as the two others, however, much exceed cobra venom in the intensity of their local action. When death is produced by Crotalus venom, the subcutaneous tissues become extensively infiltrated with a large quantity of blood and of blood-stained serum, the underlying muscles are reduced to an almost pulpy blood-stained substance, and post-mortem decomposition occurs very soon after death. Similar changes in the subcutaneous tissues, but to a rather less degree, are caused by the Diamantina venom, and in addition, hæmaturia, or more probably hæmoglobinuria was invariably produced by lethal and even by large non-lethal doses. I mention these circumstances to indicate the perfection of the protection which is produced by the administration of successive gradually increasing doses; for they can be so adjusted that a dose of each venom, even three times larger than the minimum lethal, may be administered without producing more than an inconsiderable and even scarcely observable degree of local destructive effect.

In the meantime, the process of protection with the latter venoms has not advanced further than three times the minimum lethal dose. This, however, has been sufficient to

* Diamantina venom, 1½ milligramme; *Sepedon hæmachates*, 2½ milligramme; *Crotalus horridus*, 4 milligramme.

allow experiments to be made by which it has been demonstrated that when an animal has acquired a resistant power over the minimum lethal dose of one venom, that animal is also able successfully to resist the lethal action of a dose above the minimum lethal of other venoms. To a rabbit immunized by cobra venom, a dose above the minimum lethal of Sepedon venom has been administered ; to rabbits immunized with Crotalus venom, doses above the minimum lethal of Diamantina and of cobra venoms have been given ; to animals immunized above the minimum lethal with the Diamantina venom, doses above the minimum lethal of Crotalus and Sepedon venom have been given, and in each case the animal has recovered, and but few symptoms of injury were produced. At the same time, in other experiments, indications were obtained that animals immunized with a given venom are capable of resisting the toxic effect of that venom more effectually than the toxic effects of other venoms.

My experiments have not yet proceeded sufficiently far to show for what length of time the protection conferred by any final lethal dose may last. I propose to make some experiments which will give definite information in regard to this point, and these may possibly lead to practical applications. It has incidentally been discovered, however, that protection lasts for at least a considerable period of time, even when the last protective dose has not been a large one. For example, to a rabbit which had last received twice the minimum lethal dose of Crotalus venom, the same dose was administered twenty days subsequently, and it altogether failed to produce any toxic symptoms.

Before passing to the next part of my communication, it may be stated that as yet no sufficient data have been obtained for affording an explanation of these remarkable facts. It is obvious that the blood of protected animals must contain some substance or substances which are not present in the non-protected animals, and by which the lethal and toxic effects of venoms are prevented. I have observed that when the blood-serum of protected animals is added to a solution of venoms, a distinctly observable reaction occurs, and this reaction may be of significance, when considered along with circumstances which will be stated in the remaining part of this communication, and especially with the circumstance that the blood-serum is itself almost destitute of physiological activity. This protective substance may be produced in the body by the influence of the venom, but it is also conceivable that the

substance is actually a part of the venom itself, which gradually accumulates under repeated administrations, whereas the lethal and toxic constituents of the venom are more rapidly destroyed or eliminated.

Having thus succeeded in producing a high degree of protection in animals against the toxic effects of serpents' venom, the blood-serum of these animals was, in the next place, collected for the purpose of testing its antidotal properties.

A few preliminary experiments were, however, early made with the serum of animals in whom the protection had not been carried to a high degree, and they were sufficient to show that antidotal properties are possessed even by this serum. It soon became apparent that in order to obtain some reasonable approximation to constancy in the conditions of the experiments, it was necessary that the serum snould be in such a state that it would remain unchanged during at least several weeks. It was found that this could be insured without any appreciable loss of antidotal power by drying the freshly separated serum in the receiver of an air-pump, over sulphuric acid, after it had been passed through a Chamberland's filter. A perfectly dry and easily pulverisable solid was thus obtained, which could be kept unchanged for probably an indefinite time, and from which a normal serum could easily be prepared as required, by merely dissolving a definite quantity of the dry serum in a definite quantity of water.

To this serum, whether in the dry form or in solution, it would be convenient to apply the name "*antivenene.*"

The greater number of the experiments now to be described were made with antivenene derived from the mixed serum of three rabbits, which had last received a dose of cobra venom equivalent to thirty times the minimum lethal. I avoid the expression "immunized against" thirty times the minimum lethal dose, for, as a matter of fact, an animal is always protected, or immunized, against a dose considerably above the last which it had received.

The experiments were so planned as to obtain, in three or four different conditions, as exact a definition as possible of the antidotal power of the antivenene. In the meantime, four series of experiments have been undertaken on rabbits; but all the experiments required to complete two of these series have not yet been made. In one series, the venom was mixed outside of the body with the antivenene, and immediately thereafter the mixture was injected under the skin of

the animal; in the second series, the venom and antivenene were almost simultaneously injected into opposite sides of the body; in the third series, the antivenene was injected some considerable time before the venom; and in the fourth series, the venom was first injected, and thirty minutes afterwards the antivenene.

All, or nearly all, the experiments required to define the exact quantity of antivenene that is sufficient to prevent death from different lethal doses of venom have been as yet made only in the first and fourth of these series. They are, however, in some respects the most important of these series: as the conditions for exactitude in simultaneous administration are perfectly obtained in the first series, and it, therefore, should constitute the basis for comparison between antivenenes derived from different sources; and as upon the results of the fourth series must depend the actual practical application of antivenene in the treatment of poisoning by serpent bites.

In the experiments of the first series, the doses of cobra venom administered were the minimum lethal, twice the minimum lethal, and thrice the minimum lethal. In the case of each dose, experiments were made with different quantities of antivenene so as to determine the quantity required to prevent death. In order to render it certain that a lethal dose was always administered in the experiments with the so called minimum lethal, the minimum lethal indicated by the previous experiments was not used, but instead of it a slightly larger dose (·00026 instead of ·000245 grm. per kilogramme).

When this certainly lethal dose, capable of causing death in five or six hours, was mixed with antivenene and the mixture then injected under the skin, it was found that so small quantities of antivenene were sufficient to prevent death, as ·5 c.c., ·25, ·1, ·05, ·02, ·01, ·005, ·004, c.c. ($\frac{1}{2}$, $\frac{1}{5}$, $\frac{1}{10}$, $\frac{1}{20}$, $\frac{1}{100}$, $\frac{1}{200}$, $\frac{1}{250}$ of a c.c.) for each kilogramme of the weight of the animal. With ·0025 c.c. ($\frac{1}{400}$), however, the animal died. The antivenene was therefore found to be so powerful as an antidote, in the conditions of these experiments, that even the $\frac{1}{250}$ part of a cubic centimetre, equivalent to about one $\frac{1}{15}$ part of a minim, acted as an efficient antidote. Even with the smallest of these doses of antivenene there was almost no symptom of poisoning produced. In the experiments of this series with twice the minimum-lethal dose recovery occurred when the doses of antivenene were ·75 c.c., ·7 c.c. and ·6 c.c. per kilogramme, but ·5 c.c. per kilogramme failed to

prevent death. In the experiments with thrice the minimum lethal dose of venom (a dose capable of producing death in less than two hours), recovery occurred when the doses of antivenene were 1·5 c.c. and 1 c.c., but death occurred with ·8 c.c. And even the enormous dose of four times the minimum-lethal failed to produce death, or indeed any observable disturbance, when it had previously been mixed with 2 c.c. per kilogramme of antivenene.

In the *second* series, experiments have been made only with twice the minimum-lethal dose of venom. When this dose was injected into the subcutaneous tissue of one side of the body, and immediately thereafter a dose of antivenene, it was found that doses of 1 c.c., 2 c·c. and 3 c.c. per kilogramme failed to prevent death, but that 4 c.c. and 5 c.c. per kilogramme were able to do so.

In the *third* series, the experiments have as yet been made with only the minimum lethal of cobra venom, and they show that ·4 c.c. per kilogramme of this antivenene is able to prevent death, when given 30 minutes before the venom.

In the *fourth* series, where the results are likely to give the clearest indications of the antidotal value of antivenene, it was found that recovery occurred in the experiments in which 1·5 c.c., 1 c.c., and ·8 c.c. per kilogramme of antivenene were injected *thirty minutes after a certain* minimum lethal dose of venom, but that the antivenene was insufficient in quantity to prevent death when ·75 c.c. per kilogramme or less was administered.

In this series, further, it was found that 5 c.c. per kilogramme of antivenene was a sufficient dose to prevent death after twice the minimum lethal dose of venom; but that 2 c.c., 2·5 c.c. and 3 c.c. per kilogram were insufficient.

The experiments of this series are specially interesting, as nearly all the animals showed symptoms of poisoning before the antivenene had been administered. In each of the fatal experiments, the duration of life was greatly prolonged by the administration of antivenene; and, it is probable that in many instances a second injection, made half-an-hour or an hour after the first, would have prevented death.

It has thus been established, on the clearest evidence, that the blood-serum (antivenene) of animals protected against large lethal doses of venom is able, in varying conditions of administration, perfectly to prevent lethal doses of the venom of the most poisonous of serpents from producing death in non-protected animals.

In order to obtain some evidence bearing on the question

as to whether the more powerful antivenene is produced by the long continued administration of small non-lethal doses of venom, or by the administration of doses gradually increasing until a large lethal dose is reached, a few experiments were made with the serum of a rabbit which had received $\frac{1}{10}$ of the minimum lethal dose nearly every two days during a period of three months and one week, and also of one which had received the $\frac{1}{4}$ part of the minimum lethal dose nearly every four days during a period of three months and three weeks. I did not find that the antidotal power of the antivenenes obtained from these animals was great, or nearly so effective as the antivenenes obtained from animals which had finally received a dose much in excess of the minimum lethal. When mixed with venom and then injected, 3 c.c. per kilogramme of these antivenenes was insufficient to prevent death from somewhat more than the minimum lethal dose of venom, but 5 c.c. per kilogramme were sufficient to do so.

I have also administered 1·5 c.c. per kilogramme of cobra antivenene thirty minutes after a dose one-twelfth larger than the minimum lethal of the venoms, respectively, of the *Zepedon hæmachates*, the *Crotalus horridus*, and the *Diementina* serpent; and the rabbits experimented on have recovered. This successful result is all the more remarkable when the intensely destructive local effect of each, but especially of two, of these venoms is recollected.

The experiments establishing, and to some extent defining, the antidotal power of cobra venom, further, have been made on animals peculiarly susceptible to the poisonous action of serpents' venom, a circumstance of importance in considering the probable value of the antivenene when used as an antidote in the treatment of animals of less susceptibility, among whom there appears to be sufficient evidence to place human beings. This minimum lethal dose for man probably approximates that of the cat, rather than that of vegetable feeders such as the rabbit, guinea-pig, and white rat.

It is also to be remembered that, in the meantime, the experiments have been restricted to a definition of the antidotal power in certain conditions which were not always the most favourable for the mere prevention of death. Indications have indeed been obtained which render it highly probable that death may be prevented from occurring more certainly by several administrations, rather than by one administration of antivenene, and also by the introduction

of the antivenene into the same parts as the venom, rather than into distant parts.

It would be important also to increase the number of the experiments with the larger of the lethal doses of venom as yet administered, and, it may be, to employ still larger doses; although, for practical application, the larger of the doses that have already been used, as they produce death in about an hour, need not be increased.

To these purposes I hope to apply the antivenene soon to be prepared from the rabbits which have already received fifty times the minimum lethal dose of venom.

For the actual application of the antivenene to the treatment of snake-poisoning in man, an endeavour is being made to obtain the large quantity that is requisite, from a horse now receiving considerable lethal doses of cobra venom. From this source, also, it is hoped that a sufficient quantity will be obtained to allow of the examination of the chemical properties of the antivenene to be continued, with the object of discovering the constitutent or constitutents by which the antidotal effects are produced. If the isolation of the antidotal constituent or constituents can be effected, an antivenene of greatly increased power will be obtained, and the range of efficient application will be increased. For these objects, however, it will be necessary to administer to the horse much larger doses than it has yet received; and the chief difficulty in doing this is to obtain a sufficient supply of cobra venom. By the great kindness of Surgeon-Colonel Cunningham, 9 grms. of dry venom have already been obtained, but in order to carry the protection to fifty times the minimum lethal dose, other 30 grms. would be required. I have reason to hope that the India Office will succeed in making arrangements for procuring even this large quantity.

The subject is one of practical importance to India, where the destruction of human life by venomous serpents is represented by an annual mortality of 20,000, and where the failure of all methods of treatment* has led to the introduction of a system of extermination of venomous serpents—apparently futile in its results—in the carrying out of which large sums of money have been expended.

In considering the probabilities of success by antivenene treatment, it is also to be recollected that antivenene can be obtained even more powerful than that which was used in the

* "After long and repeated observation in India, and subsequently in England, I am forced to the conclusion that all the remedies hitherto regarded as antidotes are absolutely without any specific effect on the condition produced by the poison."—Sir Joseph Fayrer *on the Nature of Snake Poison.*

experiments which have been described; and that, judging from the statistics of Fayrer and Wall, in 75 per cent. of fatal cases in man death does not occur until from three to twenty-four hours after the infliction of the bite. This latter fact appears to indicate that in the great majority of the fatal cases the dose of venom does not much exceed the actual minimum lethal; and, therefore, is not so large as the doses whose lethal action has been prevented from occurring in the experiments that have been described; in which, further, the conditions for success in preventing death were not the most favourable that could have been adopted.

It appears to me, however, that an interest and importance as great as that which can be derived from this practical application of the facts which I have brought before the Society, is to be found in their relation to the cause and treatment of many of the most fatal of diseases—those, namely, which are produced by organisms that have found their way into the body. The evidence in favour of the curative value of the antitoxines derived from animals immunized against the toxines of these diseases, seems to receive an additional confirmation from these facts. They also bring distinctly before us the fact that there are limits to this curative power, dependent on the dose of the toxine to be counteracted, on the special antidotal activity of the antitoxine that is used, and on the duration of the time during which the toxine has had an opportunity of exerting its poisonous action before the antitoxine is administered. If these and other conditions interfering with successful treatment are not determined and recognised, unmerited discredit is likely to be attached to remedies which alone of all remedies may be capable of preventing death in these diseases, by counteracting the effects of minimum lethal and larger doses of the toxine.

THE MANGE, BY SARCOPTES PRECOSE CANESTRINI, ON THE RABBITS.

BY BRUNO GALLI-VALERIO, M.D.V.S., PATHOLOGICAL INSTITUTE OF THE ROYAL VETERINARY SCHOOL OF MILAN.

As far as the year 1892 but a single species of mange was described on the rabbit: the mange by *Notsedrus cuniculi*, Roull.

In this year Professor Neumann * discovered in the rabbit another species of mange. It was characterised by the following symptoms:—

* Revue Vétérinaire, 1892, p. 141.

Beginning at the apex of the nose, lips, chin, and root of the nails; extending to the posterior face of the paws, and up to the knees and apex of the tail. On the adults, it can extend itself to the forehead, ears, and different parts of the body. It causes the formation of gray scales, thin on the ears, forehead, and back; but on the apex of the nose, root of the nails, and on the horns can assume the thickness of one centimetre. The scales being detached, remain a bloodish surface; and the animal manifests great pain.

This mange is very little itching, but the animals die in a month or six weeks.

The parasite that provokes this mange is a mite like to the *Sarcoptes scabiei*. *De Geer.*, and Neumann named it: *S. scabiei var. cuniculi*. The samples examined by Neumann had the following dimensions :—

♂ length, mm., 0·23.
breadth, mm., 0·17.
♀ ovigera length, mm., 0·41.
breadth, mm., 0·32.

An important particular of this mite is the presence of a developed embryo in the eggs still lying in the body of the female.

In the year 1893 Professor Roillet * found also the *S. scabiei var. cuniculi* on the rabbits, and gave the following dimensions :—

♂ length, μ 210—228.
breadth, μ 155—178.
♀ ovigera length, μ 340—400.
breadth, μ 260—300.

They state that the ♂ were very numerous.

Professor Canestrini, studying this mite in the year 1894 †, gave it the name of *Sarcoptes precose*, and the following characters as different from the *S. scabiei* :—

Numerous dorsal scales in the form of an equilateral triangle. They are closed to each other and extend back between the iliac spines. These are coarse, broad at the base, and rather sharp-pointed. Epimera of second pair in the ♂, with the distal extremity turned outside.

Professor Canestrini gave the following dimensions :—

♂ length, mm., 0·23—0·25.
breadth, mm., 0·17—0·18.
♀ ovigera length, mm., 0·41—0·44.
breadth, mm., 0·32—0·34.
larva length, mm., 0·15—0·17.
breadth, mm., 0·11—0·14.

* C. R. S. de Bisl., 1893, 15 Zuillet.
† Prospetro deli'oscarofauna Italiano, Parte vi., Tadover, 1894.

In the year 1894 I first found this mange on the Italian rabbits, near Milan.*

In the samples studied by me, I found the characters described by Professor Canestrini. The presence of very good developed embryos in the eggs lying in the body of the ♀, were very frequent.

The dimensions were as follows :—

♂ length, μ 230.
breadth, μ 160.
♀ ovigera length, μ 435.
breadth, μ 335.
larva, length, μ 167.
breadth, μ 134.
larva into the egg, length, μ 150.
breadth, μ 100.
egg-length, μ 150—160.
breadth, μ 88—110.

The lesions determined on the rabbits that I examined were like that described by Professor Neumann; the nose was elongated in a horn, made by the co-glutination of scales. The lips, paws, and particularly the interdigital spaces, were covered by scales which were arranged as a thimble on the fingers. Microscopical lesions provoked by this mite on the skin were described the first time by me: microtomic sections of scales appear dotted by mites, and crossed with hairs. In some parts are found heaps of mite's excrements. Little films of blood glueing the scales leading to the formation of horns or those on the nose. In perpendicular sections, the mites appear inclosed in little depressions covered by the plaits of epidermis. In the points where the lesions are more advanced, these depressions deepen more and more, particularly there where three to four hairs' follicles come together. In this case, frequently, the mites invade the follicle. In every section it is possible to observe a lesion like that described by Professor Piana† in the mange of rabbits caused by *N. cuniculi*. It is a succession of depressions in the derma which represent a true atrophy of the tissue. But the main point of view, under which I will study here this mange of rabbits, is that of the contagion.

Professor Neumann put five young rabbits in a cage with scabby rabbits, and three died of that disease, and stated that Todés saw a family of 30 rabbits quickly die of it.

Professor Roillet states that he succeeded to infect in from eight days to a month rabbits living together with scabby

* Moderno Zosiatio, 1894, No. 22.
† Ann. R. Sc. Med. Vet. Milanno, 1885—86.

rabbits, or for only staying in cages where these had lived. Death happened from three to six weeks.

The epizooty that I have studied near Milan, was caused by a scab by rabbit put among the family. In a month, all the animals were infected and other rabbits put during the year were also infected. All of them died. In October I ordered disinfectants, and the cessation of the breeding for several months. But in spring 1895, new rabbits were put in the warren, and all contracted the mange, and the owner had to cease the breeding.

Is this mange transmissible to other animals ?

Professor Neumann inoculated two dogs, a sheep, a cow, a pig and a horse, but with no result.

Professor Roillet observed the transmission to guinea-pigs and ferrets by living in cages, infected with scales of scabby rabbits.

In the year 1894, I observed the natural transmission to a pregnant guinea-pig. The mites taken on this animal had the following dimensions : —

♂ length μ 241.
breadth μ 180.
♀ ovigera, length μ 325.
breadth μ 268.
Larva, length μ 174.
breadth μ 127.

Another guinea-pig that I put in a cage infected with scales, was not infected.

I also made inoculations on the dog, but with no result.

I observed also that men, poultry, and a dog who cohabited with scabby rabbits were not infected.

To assure myself of the impossibility of transmission of this mange to man, I experimented on myself. I scraped the skin on the wrist and rubbed the place with the scales, which I left *in situ* with a bandage. Notwithstanding that this place was left bandaged for two weeks, there was no appearance of the mange.

These observations and experiments on the contagiousness of this rabbit's mange have, I think, a great importance under the point of view of rabbits' destruction with *Sarcoptes precose*. In fact, while the rabbit's mange by *Notosdrus cuniculi* is very little contagious for rabbits,* the mange by *S. precose* is endowed with a great power of contagiousness

* Professor Rouillet states, in fact : " Nous n'avons per la transmettre à de loipicus par le dépôt de nombreaux surcoptes sur la peau rasée, ni même par une cohabitation de onez jours " (33 *Zool. Méd.*, 1893).

for rabbits. In a short time many, very many of these animals are struck, particularly the young, and all the infected die.

At the same time, it is difficult to infect guinea-pigs, ferrets, and other animals; and, what is more important, man is refractory to this infection.

Therefore it is not dangerous to employ *Sarcoptes precose* for the destruction of rabbits in the lands where they are too numerous. It is sufficient to introduce one scabby rabbit in the lairs to infect all the colony.

Editorial.

MARKINGS IN EXAMINATIONS.

THE examinations have come and gone and those students who satisfied the examiners have gone home rejoicing, whilst those who failed have gone home in sorrow. I remember being present once at a distribution of prizes in one of our large Edinburgh schools and the chairman, who was at that time Master of the Merchant Company, said in his address to the students that he divided them into three classes—namely, those who had deserved prizes and obtained them; those who had not deserved prizes and had not obtained them; and finally, those who had deserved prizes but had not obtained them. The division was excellent. There must always, I fear, be a section of deserving young men in every school and college who have been badly treated by fortune as personified in that awful being, the examiner, and have gained less than they deserved. It is on their behalf that I take up the cudgels just now.

I observe that my friend Mr. Rutherford, at the recent meeting of the Royal College, spoke in favour of the old system of marking, and expressed a preference for marks like "good," "sufficient," "bad," as compared with arithmetical symbols, but I entirely disagree with Mr. Rutherford. I think the new arithmetical system very much superior to the old, as being more rational, as giving a better gradation and as being more in harmony with the University system. I cannot support my opinions better than by reporting a conversation which I had the other day with a friend of mine who has had considerable experience as an Examiner in one of our Scottish Universities, both with regard to Entrance and Degree Examinations. My friend told me that the system employed by him and his colleagues was strictly arithmetical—no other was allowed, and, indeed,

he said, no other was practicable. The Board lays down precise laws for marking papers, from which no deviation is permitted; so much is given to each paper and so much to each section thereof. The divisional examiner, who has been appointed by the Board to draw up the paper, gives further details as to the marking of each individualquestion, and, in subdividing, it very often happens that even fractions are used, such as $2\frac{1}{2}$, $3\frac{3}{4}$, etc. My friend added that in one examination-paper which he had to revise he found it desirable to use decimals, in order to obtain finer shades of marking in a question which contained a great number of minute details. A pass-mark is fixed in all subjects, and candidates failing to reach this mark are disqualified. Of course, there are always a number of doubtful candidates, but their cases are always specially considered by the Board, which, at its half-yearly meetings, has absolute power to ratify or alter the marking of the examiners. This is done, not only for the purpose of keeping examiners in check, but also with a view to maintaining a uniform and just standard in all four Universities. My friend follows this system most religiously, deducting for each mistake made by the candidate a certain fraction of a mark, determined by the length of the question and the total number of marks allowed for a correct answer. In the case of a serious mistake, he deducts two or even three such fractions, and then, when all the papers written by the candidates have been revised, he goes over the doubtful papers a second time, for his own satisfaction, taking, this time, a general survey, and neglecting individual errors, but rather comparing paper with paper. In nearly every case he finds that his original judgment, guided by arithmetical considerations, was sound; and thus, having given the doubtful men (that is, those just above and below the pass-mark) the benefit of a two-fold revision, he abandons them to their fate or to the mercy of the Board. A line has to be drawn somewhere, and he has drawn it; he has satisfied himself that there is a distinct line of demarcation in point of real merit between, let me say, A. with 51 marks and B. with 49, that these figures, although in the first instance applied after a mere process of arithmetical calculation, indicate the difference between success and failure, if the pass-mark is 50, and so he never feels any qualms of conscience, and his marking has never been altered by the Board. I repeat all this because I think the University system of marking and valuing papers most admirable; besides, it is quite practicable, has been found to work smoothly, and is, although apparently com-

plicated, really quite simple. I trust our Board of Examiners will adhere to the arithmetical system.

I questioned my friend further as to whether compensation was allowed by the Universities when several subjects have to be taken, and the candidates fail in one or more. He gave me to understand that there was something of this kind, that excellence in one subject was allowed to compensate for deficiency in another, care being always taken that no candidate, who had signally failed in any one subject, should be allowed to get through, however excellent he was in his other subjects. This appeared to me quite just; pretentious ignorance ought to be punished. The man who has a mere smattering of a subject ought to be sent back to his studies, and bidden stay at them till he has become wiser and more modest. Besides, to allow such a man to pass, is to outwit the intentions of the Medical or Veterinary Council, whose object is to obtain breadth of culture, and strength and solidity of knowledge—not mere evanescent brilliance.

I venture to submit what I have written to the gentlemen forming the Examining Board, in the hope of strengthening them in their resolution to use the new system of marking, and of inducing them to adopt a compensation scheme. No one knows better than I do the misery caused by failure to the hard-working, conscientious student, who does well in every subject but one, and there finds that memory, by a sudden and unexpected treachery, leaves him helpless and at the discretion of the examiner. Surely, in such cases mercy is more noble than justice.

I had almost forgotten one point. My friend, the examiner, told me, on authority which I acknowledged to be undeniable, that the Scottish Education Department use the arithmetical system in valuing the papers of candidates for the Leaving Certificates.

AN IMPORTANT DISCOVERY.

ONE of the most remarkable discoveries of modern times in the field of medical science, has just been communicated to the scientific world by Professor Thomas R. Fraser, of the University of Edinburgh. The results of Professor Fraser's patient and laborious investigations were made known at the beginning of last month to the Royal Society of Edinburgh in a paper read by the learned Professor himself, and I am privileged in being able to print this paper at full length in another page of the Journal. There occur from time to time in this world's history great events which mark, so to speak,

the progress of the human race; they may be very simple, as was the discovery of the power of steam or vaccination, and they may make us wonder that we did not ourselves see what was for so long a time actually staring us in the face, but they are none the less epoch-making discoveries. The world is never the same world after these discoveries that it was before—can never be; we are, as it were, by them inoculated against an old virus of ignorance or superstition, and we are no longer susceptible to its influence. There is something so grim and so mysterious, so silent, and so unerringly fatal about the poison-bearing snake that it is not wonderful if our remote ancestors regarded it as the incarnation of wisdom. "Now the serpent was more subtle than any beast of the field which the Lord God had made." So speaks one of the most ancient historical books of the world in its most ancient myth, and we seem to feel no surprise that the serpent should be then and afterwards looked upon as the embodiment of the spirit of cunning or of evil, or as being the enemy of mankind—all the more deadly because of its secrecy and mystery. "I will put enmity between thee and the woman, and between thy seed and her seed; it shall bruise thy head, and thou shalt bruise his heel." The last clause of the heavenly curse has been amply fulfilled; the loathsome serpent has treacherously performed his deadly task; are we now going to see the fulfilment of the other part of the renunciation? Is man to bruise the serpent's head, strip it of its horrible fangs, and render its poison innocuous? This is the problem which Professor Fraser set before him, and very wonderfully has he solved it so far. When once he has perfected his plans and finished his investigations—and this is only a matter of time, the essential difficulty of determining the nature and the mode of operation followed by the poison having been removed—we may look for immunity against one of the greatest scourges of the human race, as well as of our domestic animals.

Seldom has so interesting a paper been brought before the readers of the VETERINARY JOURNAL, and I therefore cordially recommend it to their most careful perusal.

ANOMALOUS NERVOUS SYMPTOMS PRODUCED BY PARASITES.

BY J. T. DUNCAN, M.D.

THAT serious reflex nervous phenomena may be produced by the presence of parasites in the intestinal tubes is fully admitted by authorities upon human medicine.

In regard to this, Ransome, writing in Reynold's System of Medicine, observes: "*Post-mortems* have shown that round worms produce serious and even fatal convulsions in susceptible persons." Cobbold, in Quain's Dictionary of Medicine, remarks: "They sometimes produce cerebral disturbance in several cases, amaurosis, catalepsy, convulsions, crotomania," while J. Lewis Smith in his work on diseases of children, gives the following as some of the results, or effects of the round worms: "unequal dilation of the pupils, twitching of muscles, clonic convulsions, delirium, rarely deafness, chorea, paralysis, and night blindness."

So far human medicine, how is it in the lower animals? Will parasites produce in them grave cerebral disturbance (in the horse for instance), as shown by temporary loss of sight, delirium, convulsions, even going on to a fatal termination?

Scattered through the various veterinary journals are to be found cases which might be used as illustrations of this point; but in this short article, instead of quoting these, I prefer to record an interesting series of cases occurring in the practice of Mr. R. Robb, V.S., a graduate of the Ontario Veterinary College.

His experience is important, and strongly supports the position that parasites of various kinds will produce the most serious reflex nervous phenomena in the horse, especially in the young animal. The following is the gist of his letter:—

Case No. 1. On the 31st December I was called out to see a nine months' old colt four miles in the country. I found the colt standing and being supported by an attendant.

The colt was in a comatose condition. I told the man to leave it alone to see what it might do, but it fell to the ground as if lifeless, showing no resistance whatever. Pulse 52, rather weak; respiration slower than normal; temperature 99 2/5. I refused to give any treatment. Next morning I went and found the colt dead, it having expired at midnight without a struggle. The stomach, on *post mortem*, was literally covered with bots, especially the cuticular portion of it.

On cutting open the small intestines I found in all 115 round worms (Ascaris megalocephala). The small intestines were empty, the remainder of the canal having fæcal matter throughout.

I had occasion to go back to the place the next morning, and was met at the gate and asked quickly to come as they had another sick colt. The colt was rising three. He had been frantic in his box before my arrival, running against

everything, plunging and kicking. When I got to the box the colt was standing and being held by two men, one on each side of him; he was rather quiet and in a semi-comatose condition, but easily excited. He was quite blind as seen from his actions. Pulse and respiration being 40 and 10 respectively. After watching him a few minutes I came to the conclusion that I would try and drench him. Gave him purgative (aloin) along with four drachms of brom. potas., giving the latter three times a day after this in his water, as he was very thirsty. After the purgative commenced to operate, say, 24 hours after, he began to brighten up. In four days his eyesight had returned, and he improved right along. I watched for parasites, but none were passed during his sickness. Suspecting the food to be the cause of the trouble, I examined it. I came to the conclusion that it might be the ensilage that was causing the cerebral symptoms, and I advised him to withdraw it, though I had mentioned to the owner that the bots and worms were the cause of the first one's death. Both colts were in good condition, and had been fed on the same kind of food, ensilage, straw, and fodder.

Case No. 3. The third one was a colt coming three, but being a promising colt he had been in the city all fall and winter, and getting entirely different food from the others. On the 5th January the colt was apparently in his usual good health. About five p.m. he was found lying against the partition of the stall in an awkward position, his head elevated as though he was trying to reach for some fodder that was hanging from the roof of the stable. He was quiet, but when made to get up was found to be quite blind, as he would walk up against anything in the box. In a little time he got excited and jumped over into the next box-stall. Being frantic now, he plunged here and there all over the interior of the stable, knocking down everything that came in front of him. He then plunged through the side of the stable and ran down an alley that was close by as fast as he could go. Thinking the colt was mad I was sent for about ten p.m. I found the colt about 100 yards away from the stable bracing himself sideways against a fence. He seemed to be fast asleep, his neck and head elevated, and over the fence. By much effort we got him back to the stable. He was very much bruised about the head; one eye was closed and swollen very much, the other was normal but was perfectly blind. I attempted to give him medicine when he started to plunge in a frantic manner. We seized the halter and managed to

throw him and kept him down, he kicking violently. After he was cast I gave him three drachms aloin and pot. brom., four drachms conjoined in a little water. The struggling and kicking was severe until five a.m., when it became more tranquil and intermittent. I gave brom. three drachms every two hours after the first dose until seven a.m., when I saw that the end was near. Before death the breathing became stertorous, he died very quietly. After being removed to the knacker's-yard I held a *post-mortem*. I found the stomach somewhat distended with fluid ingesta, there being about 50 bots here and there attached to the cuticular portion and a few on the villous. At the pyloric opening, however, hundreds of bots clustered together so that it was impossible for me to count them; they completely blocked the opening. The mucous membrane on the villous portion seemed to be denuded in some parts and easily stripped off, also some parts of the small intestines here and there were in the same condition. The brain was normal.

In only one of these cases does it appear that the brain was examined, but in this, showing more profound involvement of the central nervous system than either of the others, the brain was found to be normal. And in neither of the autopsies was appreciable cause found for the anomalous nervous symptoms saving the presence of the parasites. Such being the case it is fair to consider two at least of these cases as illustrations of the reflex nervous phenomena which may be produced in the horse by parasites in the stomach or intestines.

The abdominal tumour sent last month by Mr. Elliott, veterinary surgeon, Darlington, proved to be really an abscess with excessively thickened walls. As our correspondent suggested it had the appearance of being of tuberculous origin, but in spite of the fact that the pus from tuberculous lesions invariably teem with the tubercle bacilli, none could be found in the contents of this growth after repeated attempts to demonstrate it. The tumour was probably a relic of an old attack of strangles.

ESSAY ON ANÆSTHESIA.*

BY MR. T. R. MULCAHY.

MR. CHAIRMAN AND GENTLEMEN,—It is with the greatest diffidence that I have decided to lay before you to-night my

* Read before the Edinburgh Veterinary Medical Society.

ideas on anæsthesia, for I am well aware it is a subject rich in material for a much more eloquent pen than mine to do it justice, and because it is one about which much has been said and written of late.

However, I hope you will grant me your indulgence, and overlook my shortcomings.

In the few remarks that I intend to make, I shall not waste your time with an account of the history of anæsthesia; neither do I intend to weary you with a detailed account of the discovery of chloroform or its preparation; nor shall I enter into a discussion as to the merits, demerits, or practicability of anæsthetics in veterinary science, either from a humanitarian point of view, or the more mundane one of £ *s. d.* These are all things I am well aware you have heard discussed over and over again; and I am convinced you will one and all vote for anæsthetics where indicated and when practicable.

I shall, therefore, try and confine myself to what is of more importance to us, viz., a knowledge of the theory of anæsthesia, the precautions to be taken before administration, the modes of administration, the different stages, the signs of approaching danger, the causes of death, the *post-mortem* appearances, and the means of resuscitation.

Anæsthesia literally means loss of touch. The idea which the word is meant to convey would be more accurately expressed by the term "Analgesia," which signifies loss of sensation. The familiarity of the term must, however, justify its almost universal application.

General anæsthetics are a group of volatile bodies whose vapour has the power of producing unconsciousness to pain and to external impressions. They owe these properties largely to the rapidity with which they are absorbed and again eliminated from the system. They gain access mainly through the lungs, and are for the most part excreted by the same channels.

The term general anæsthesia is applied to the effects of such agents as chloroform and nitrous oxide, in contradistinction to local, as produced by cocaine. Ether has both a general and local action, but the one is in no way connected with the other.

In local anæsthesia, insensibility to pain is produced in a certain part without rendering the animal unconscious to surrounding objects.

Theories suggested to explain the action of general anæsthetics are:—1st, that they produce their effect by

partial arrested oxidation; 2nd, by producing physical changes in the blood; 3rd, that anæsthesia, like sleep, is produced by cerebral anæmia; 4th, that they act directly on the nerve centres concerned in the production of such results.

Bernard says that anæsthesia is due to semi-coagulation of nerve protoplasm, but he brings forward no proof that such is the case. The fourth theory has the most supporters. The only proof of the first is that anæsthetics decrease oxidation, and that in asphyxia there are symptoms similar to those produced by anæsthetics.

The second theory is advanced because anæsthetics do produce some changes in the blood.

The symptoms of asphyxia, however, are only analogous, not identical with those of anæsthesia, and it cannot be proved that the lessened oxidation and blood changes are the cause and not the result of the nervous symptoms. Again, there are drugs such as amyl nitrite, which lessen oxidation, but do not produce anæsthesia; and, in fact, anæsthesia can be produced by too much oxygen in the blood.

As regards anæmia of the brain, it results from suspension of function, and is, therefore, a result and not a cause of anæsthesia; moreover, it has been proved that chloroform acts on the bloodless cerebrum. It has also been shown that in anæmia nerve function is not arrested, while in anæsthesia it is. It must then be concluded that anæsthetics act directly on nerve centres.

There is yet another theory based upon the power which chloroform has of dissolving the stroma of the red blood cells.

This stroma is composed of "Protogon" which is also an important constituent of nerve centres, and Hermann concludes from this that anæsthesia produced by chloroform may act by dissolving the protogon of these centres. Bile acids also dissolve protogon, and Hermann says that they have anæsthetic properties. However, I think this theory is rather far-fetched, as most likely death would have occurred long before this would be affected, and even if it did not, recovery must necessarily be very protracted.

This much I think on theories will suffice, and now I beg to direct your attention to the more practical points.

Administration.

Precautions: Before putting an animal under the influence of anæsthetics, the operator should ascertain whether it is a fit subject. This is done by a careful examination of the

heart, respiratory organs, etc. All animals with chronic heart or lung disease may be considered unsuitable subjects. They should not be administered, at least in the ordinary way, to animals with any obstruction to respiration. If the obstruction be in the larynx, tracheotomy may be performed. and the patient made to inhale the drug through the aperture.

The patient should be in a condition capable of bearing the effects of the operation.

The last meal should be given some hours before operating, as chloroform acts more rapidly on an empty stomach. The patient must not have been subjected to any debilitating influences, such as very hard work or starvation, or it may succumb to the effects of the operation.

Some advise the previous administration of physic. In this I see no great advantage, neither is there much ground for objection, provided the dose is small. In all animals the last meal should be of easily digested food.

If the patient be a large animal, it should first be cast and well secured.

The excitement consequent may give rise to an appearance of jugular pulse, but this is in reality the pulsation of the carotids. The same pulse is seen in the ox in rumination, and must not be mistaken for valvular disease or obstruction.

Some advise the administration of a dose of opium or chloral, or better, a hypodermic injection of morphia some time before casting, with the object of lessening the struggling of the animal during the early stage. The reasons for and against are numerous.

Incomplete anæsthesia is said to be more dangerous than complete. Accidents in this are not, however, due to the drug, but are referable to the shock produced by the operation, the nervous system not being sufficiently numbed to bear it.

Obstruction to respiration by falling back of the tongue is less seen in animals than man, and of course can only occur in the dog. It is indicated by stertor, and can be relieved by pulling forward the tongue. That the tongue may be the more readily got at, it is advisable to remove the muzzle when the animal is past the excited stage, and continue the administration by the open method.

In operations about the face, the use of anæsthetics is said to be dangerous. This is supposed to be due to the near relation of the deep origin of the fifth nerve to that of the tenth (Pilnatory body).

In operations about the mouth and throat it must be remembered that the epiglottis and pharyngeal muscles are paralyzed, consequently foreign matters, as blood, etc., may find their way down the trachea.

Modes of Administration.

Having placed your patient in a convenient position for the operation, you proceed to administer the drug. If by inhalation, your first care should be to lubricate the nostrils, as the vapour, especially of chloroform, may cause vesication of the mucous membrane.

Various muzzles are used to facilitate the administration; none of those should I approve of which do not admit of plenty of air. They certainly cause less waste of the drug, but some of them in my opinion produce anæsthesia as much by not admitting of the free outlet of CO_2 as by the agency of the drug; this of course must be very dangerous to life.

Others again consider muzzles unnecessary, and prefer a simple nosebag with holes in the upper part to admit air. Another method is practised in some parts, viz., per rectum. The mode of procedure is as follows:—A tube is inserted well into the rectum and then connected with a flask containing the drug. The flask is then placed in hot water which causes speedy evaporation, the vapour passing thus into the bowels and is absorbed. One ounce of chloroform is said to be sufficient to anæsthetise a cow if given in this manner. The speediest method is by introducing the drug directly into the blood stream. Fifteen minims of chloroform are said to be enough to anæsthetise a dog if injected into the jugular. This method is, however, so very dangerous it should never be adopted in practice, and deserves but passing mention.

The simplest method of administering chloroform is by using a sponge and towel. The drug is poured on a sponge and applied by the hand to one nostril; the whole is then covered by a towel to prevent the vapour being carried off by the currents of air. It is hardly necessary to state that a draught will interfere materially with the administration. If the sponge be applied to the lower nostril, it will insure the freer admixture of air. The advantages of the sponge over the muzzle are that the mucous membrane can be more easily observed, and that the ministration can be more readily stopped if necessary, also there is a freer admixture of air, and the exhaled air more readily diffuses. If the administrator applies the sponge with one hand, he can take the pulse

at the submax. artery and note the sensitiveness of the conjunctiva with the other.

With regard to the dog the best method is by using a wire muzzle. A piece of sponge is fixed on the nose of a wire muzzle and applied in the ordinary way. The drug is then cautiously poured on the sponge and the whole covered with a towel. If the dog is a small one, it may be put in a deep box covered over with a towel the drug being put in the box on a sponge, or poured on the towel from time to time until the patient is brought under its influence.

Dogs are considered by many to be peculiarly susceptible to the poisonous influence of chloroform, but Professor W. O. Williams states that this is not so if the drug is administered slowly. It should be remembered that in all animals it is advisable to begin by using a small quantity.

Signs of Danger.

Connected with the administration of anæsthetics, there are certain signs of approaching danger which one must know and be able to identify.

1st. *Cough* indicates that the vapour is in too concentrated a form, also that there is spasm of the glottis, which is sometimes caused by the stimulating effect of the vapour, but passes off as the drug begins to produce its central effect.

2nd. *Pulse.*—If the pulse suddenly becomes very quick, weak or irregular, the drug must be at once removed and restoratives applied.

3rd. *Respirations.*—These are very important and generally appear before the signs of failure of the heart's action. If the respirations become shallow and stertorous, the administration should be at once discontinued.

4th. *Conjunctivæ.*—Generally while the conjunctiva responds to the stimulation of the finger no danger is to be apprehended, but if it become quite insensible, administration must be at once stopped.

Some consider the insensibility of the cornea a sign that the animal is fit to be operated on. I am of opinion that anæsthesia should never be pushed so far as this.

5th. *Pupil.*—In the stage of true anæsthesia, the pupil is contracted. If it dilate suddenly, danger is to be apprehended. The phenomena of the pupils are, however, not constant.

The proportion of chloroform to air should be about 4 per cent. of chloroform. In this proportion the heart will continue to beat even afer respiration has ceased; hence there is

a greater chance of the restoratory measures proving effectual.

It may be found advisable to begin with one drug, and continue with another. For instance, the great excitement produced at first by ether, may be obviated by beginning with chloroform. In the same way the depressant effects of chloroform may be avoided by continuing with ether.

The phenomena produced by one drug do not materially differ from those of another. I shall therefore describe them as produced by chloroform.

(*To be continued.*)

UNION OF NERVE.

COMMUNICATED BY JOSHUA A. NUNN, F.R.C.V.S., C.I.E., ARMY VETERINARY DEPARTMENT, LAHORE, INDIA.

THE following two cases of union of the plantar nerves, with return of sensation after neurectomy may, perhaps, be of interest, as there is an exact record of dates:—No. 1, aged Australian gelding, double neurectomy near fore, on 10th November, 1890. Tested after the operation by pricking with a pin; complete loss of sensation. Destroyed on November 8th, 1893. Prior to destruction, tested by pricking with a pin; sensation present. On dissection of limb both branches of the plantar nerve were found united. The specimen is in the Museum of the Lahore Veterinary College.

No. 2, aged Australian mare, double neurectomy on both fore limbs on 21st June, 1893. Tested after operation by pricking with pin; loss of sensibility. Came again under notice 26th April, 1895. Lame from corns both fore feet; tested by pricking with pin; sensation in both feet. In both these cases a full inch or more of the nerve had been excised. Perceval in his Hippo-Pathology, Vol. IV., page 221, states that a mare operated on went sound for two years, when lameness and sensation returned; that a second, three years after operation, was sound; and a third after eight years. Williams' Veterinary Surgery, page 355, states that nerve union, with return of lameness, does not take place for at least two years. Mr. Bowlby, in Christopher Heath's Dictionary of Practical Surgery, Vol. II., page 62, states that if the nerve is merely divided, that a year or more must elapse before union is complete; but he also says: "If there is wide separation of the divided ends, and especially if muscular or scar tissue intervene, union will most likely not occur at all, and in any case will be long delayed. But, though delayed, union may occur

even after excision of as much as two or three inches of nerve trunk." In the *British Medical Journal* of August 5th, 1876, a case is related by Mr. Favell in which, after excision of two inches of the sciatic nerve, sensation was restored by suturing in about a year.

IMPERFORATE ANUS WITH FALSE OPENING.

J. WASHINGTON IRVING, M.R.C.V.S., BRISBANE.

THE following case struck me as being remarkably interesting from the fact, that so far as I can learn, no similar case has been recorded.

The subject, a dark brown hackney mare, 4½ years old, 15.1 hands high, and in the "pink of condition," was brought into the hospital for examination, the owner informing me that she had no proper "backside" (his own word), and that the fæces were passed by the vulva instead of the anus. The owner, naturally, thought this a very strange occurrence.

I may say that the mare had only been purchased the day before at an auction sale, having been brought in with a "mob" of country horses. On lifting the tail the vulva and anus presented an almost normal appearance, the only deviation from the normal being a lack of opening to the anus. On further examination per vaginam a perfectly-formed opening was found on the roof of the vagina connecting this organ with the rectum; through this opening the hand could be passed with ease.

The points I would emphasise are:—(1) the age of the animal (4½ years); (2) the opening into the vagina of an anus perfectly formed; and (3) the fact of the animal being in good condition, the fæces being passed without the slightest inconvenience.

Personally, I should feel gratified if any other practitioners having met with similar cases would give their experiences.

[EDITORIAL NOTE.—A five-year-old mare, bred in Ireland, that presented exactly similar appearances, was subjected for examination to the Editor a few years ago.]

THE EARLY DAYS OF ANÆSTHETICS IN VETERINARY SURGERY—A RETROSPECT.

(*Continued from page* 409.)

BY E. WALLIS HOARE, F.R.C.V.S., CORK.

IN the *Veterinarian* of May, 1847, Messrs. Henderson and Cherry continue their article on "The Effects of Æther." Further experiments are recorded, in which an apparatus is

employed, admitting a proportion of atmospheric air. They arrive at the conclusion that a very large amount of the drug is required to induce a requisite degree of anæsthesia, also that a continuous stream of æther vapour is necessary before the full effect is produced.

Very interesting remarks are also made with reference to the exciting effects of æther on some individuals, these being ascribed by the investigators to the development of the intellectual portions of the brain.

They regard the action of æther as being chiefly exerted on the spinal cord and its branches, paralysing or suspending the functions of these parts; such views, it need hardly be remarked, would not be accepted in the present day as correct.

In the editorial of the same month, we find that although sanguine hopes are expressed of the successful employment of æther in the future, still the editor does not consider the drug either safe or expedient under present circumstances, and ridicules the statement made by Professor Sewell in his report for the Royal Agricultural Society, that "nothing beyond a common soap-dish filled with æther, and held to the animal's nose, is required" to produce anæsthesia.

In June, 1847, Mr. Robert Olden, V.S., Cork, writes an interesting article on "An apparatus for the safe administration of the vapour of æther." He clearly points out the errors that former experimenters fell into, and shows that the case of death recorded from æther, was primarily due to asphyxia. He also states that the mind does become affected by æther, and that nothing short of coma suspends the function of motion.

His apparatus is constructed with an air-tube and a valve so as to allow a proper proportion of air during inhalation, the amount of the drug required being from seven to eight ounces, and time from four to seven minutes, the administration being conducted with the animal in the standing position. A diagram of the apparatus fixed to the horse's head is also given, and instructions with reference to its use, both for inducing anæsthesia as well as for controlling vicious horses. In July, 1847, we find that Mr. Arthur Cherry writes a reply to Mr. Olden and criticises the views of the latter with reference to the physiological action of æther. He also states that the apparatus used and invented by Mr. Olden was long before this employed by himself and other investigators, in fact, a superior class of instrument to the one in question, but the inventor through modesty did not wish either

description or drawing of it to be given for fear of making public imperfect instruments.

This discussion forcibly reminds us of a similar one which was carried on last year in the *Veterinary Record* with reference to the claims for originality of a chloroform apparatus, but which eventually degenerated into an academic discussion on the significance of certain synonyms, and is another example of the veracity of the old adage that "history repeats itself."

In December, 1847, we find the first notice of chloroform in the *Veterinarian*, consisting of an extract from the *Edinburgh Mercury*, describing the application of the drug by Professor Simpson and others, and its advantages over æther.

In January, 1848, an editorial appears on the subject of chloroform, in which is described an experiment with the drug by Mr. Goodwin, V.S., on a horse at the Royal Mews.

The drug was administered by means of sponges and an ordinary leather muzzle, with the animal in the standing position, and held by means of a cavesson.

Violent excitement was produced, the animal reared up, and succeeded in removing the cavesson, bridle, and muzzle off his head.

"At this period the horse had the aspect of one momentarily struck with tetanus. There was the wild, senseless, ghastly stare, the stiff outstretched limbs, the body remaining supported by its hind quarters against the boards."

The above is a graphic description of the action of chloroform when administered to a horse in a standing position, without much air being admitted, and the drug being inhaled in quantity.

This tetanic condition of the muscles and limbs is very characteristic in the primary stages, when a toxic dose is administered.

In the above experiment it is stated that sensation was absent from the surface of the body, but that in consequence of the muzzle having come off, total insensibility did not continue longer than a couple of minutes.

In the same month Mr. Cockburn, V.S., Haddington, performed neurotomy on a horse, under the influence of chloroform, in the presence of several medical men. Two ounces of the drug were poured on a piece of flannel cloth, below which was a sponge, the whole being placed in a tin case, which was tied over the horse's nose, and surrounded by a flannel bag.

In 3½ minutes the animal fell over, and in five minutes it was perfectly insensible.

On cutting the second nerve, the animal made a slight movement, and more chloroform was given, the other nerves being exposed and severed without a quiver.

In 25 minutes from the commencement the animal was again on his legs.

We recommend the above instance to the notice of those who so frequently dilate on the dangers attendant on the administration of chloroform to the horse, and the time and trouble involved in same.

In March, 1848, Mr. Wm. Field contributes an article on "The Effects of Chloroform on Horses."

The drug, in his investigations, was administered by means of a muzzle, with the animal in the standing position. Mr. Field, however, very justly condemns the practice of administering the drug to the horse in the standing position, in consequence of the uncertain manner in which the animal may fall.

In the same number Mr. J. C. Pickering, of York, records a case of castration of a six-year-old thoroughbred horse under the influence of chloroform. A special muzzle was employed and 2 ozs. chloroform used; time, from putting on muzzle to completion of operation, 6½ minutes; in 12 minutes from the time of putting on the muzzle he was on his legs again, walked to his box, and in less than half-an-hour would have fed as well as ever, had he been allowed.

In March Mr. S. Peech gives an unfavourable account of his experience with chloroform, he having employed 8 ounces of the drug to each of two mares for the performance of neurotomy. Evidently there must have been great waste of the drug, or the latter was of very imperfect strength.

In November, 1848, we find an extract from a Belgian medical journal on the "Effects of Chloroform on Animals," being portion of a communication read by Professor Thiernesse, before the Academy of Medicine at Belgium. In this, very favourable accounts are given of the employment of chloroform and æther to horses and dogs.

(*To be continued.*)

INVAGINATION OF THE CÆCUM INTO THE COLON.

BY "HIRUDO."

THE following case of invagination of the cæcum into the colon I am induced to record, because so far as I am aware

it is a rare lesion, and, indeed, the possibility of the blind gut insinuating itself into the colon by turning itself inside out, might very well be doubted by anyone who had not seen such a condition himself or who had not heard of a well authenticated case.

A cab proprietor let out a bay eight-year-old mare to two gentlemen to drive to a neighbouring town eight miles off; during the afternoon a telegram arrived stating that the mare was ill and requesting that another horse be sent to take the fares back home. I accompanied the owner, and about halfway we met the gentlemen coming back. They stated that the mare was taken very ill with colic shortly after their arrival at the town, some medicine was given, and after a time she appeared to get all right. We changed horses and traps, and the cab proprietor and myself came slowly back with the mare. When she got into the stable she appeared to be all right, but after a little time she began to curl the tail, scrape, and finally lay down. I gave her a chlorodyne draught and left her, returning in an hour to find the animal about the same.

I explored the rectum and removed a few softish pieces of fæces. The large bowels were distended with gas, but there was nothing to indicate that so profound an alteration of position had taken place as the *post-mortem* disclosed. Borborygma was entirely absent, the pulse was 50, the artery rather tense, there was no sweating, and the pain evinced was mild; respiration slightly accelerated. The condition of the animal suggested colic from constipation.

I now administered six drams of aloes in a ball, gave injections with oil, went away, returning in two hours.

My patient was now in a far less satisfactory state. She was excited and extremely restless; not in violent agony, but yet in constant pain; she was never still, but was constantly engaged in some manœuvre—scraping, looking round, shaking the head, curling the body, crouching down; sometimes she would go down, but at this time did not lie long. The rectum was empty and formed a cavernous space, the folds of mucous membrane being obliterated.

I remained all night with my patient, during which time she was bled, the abdomen was stimulated, several anodyne draughts and hypodermic injections of morphia were administered, but nothing seemed to have any effect in relieving the pain, which was almost continuous, and at times agonising. The animal died at about four o'clock in the morning. A *post-mortem* examination was held the same day. On opening

into the abdominal cavity the cæcum, which is usually a prominent object, could not be found, and when the colon—which felt as if distended with fæces—was cut into, the mucous surface of the cæcum presented itself, and the whole of that gut was found to be engaged in the colon.

It would appear from this case that the gravest alterations of the relations of the bowels are in the horse compatible with life, and that they may at first occasion only a mild degree of pain. It also shows how difficult it is—if, indeed, it is not impossible—to diagnose the existence of such lesions *intra vitam.*

TUBERCULOSIS IN THE HORSE AFFECTING LUNG, SPLEEN AND LIVER.

BY MR. R. ELLIOTT, V.S., MIDDLESBORO'.

THE morbid specimen forwarded on the 14th, is a portion of the liver of a four years' old cart gelding. I may say the whole of the liver was exactly as the piece forwarded. The spleen was also very much enlarged, in which were several large abscesses, containing about half-a-pint of pus each. There was also a large abscess in the lungs.

The subject was purchased by the owners last August, the dam of which was a very good, hardy, cart mare, the sire "Enterpriser," a cart horse, whose stock has the name of being "soft."

The subject of this case was a great, good-looking animal, 17 h.h., well made but slow, and weighed between 16 and 17 cwts. previous to his illness, which was first noticed about nine weeks ago in this way. He took more driving on. If his harness was taken off in the stall, and he was a yard from the manger, he would stand there until forced up to it. Three weeks ago I was called in.

Symptoms:—Pulse 84, temperature 105. Respirations slightly accelerated, v.m.m. slightly infected, and rather yellow, appetite practically suspended, would occasionally eat a little hay or grass, perhaps a carrot; hay tea, he would drink, about three gallons every 24 hours. The temperature and pulse varied, the former from 103 to 106, the latter from 84 to 120. Death took place on the 13th, about 9.30 a.m.

(The surface of the liver was dotted over with whitish nodules, about the size of a small marble. They were slightly raised above the surface. In the substance of the organ they were confluent, and areas more or less large occurred, where the liver parenchymas was replaced by this tumour substance.

When the nodules were cut into, they were found to be made up of firm cartilagenous-looking tissue. This appearance characterized also the areas found in the liver substance. There was no trace of pus or of caseous matter in any of them.

Near where the posterior cava passes through the liver, an abscess, about the size of a man's fist, existed. It contained about five ounces of creamy pus. A cover glass film from this, stained by the Ziehl-Nilssen method, showed great numbers of the tubercle bacillus.)

Cases in Practice.

CYSTIC TESTICLES.

THE following record of an unsuccessful attempt to castrate a rig will show one of the dangers which environ those who perform this operation, and especially those who are determined to get something to remove, testicle or no testicle. The case occurred in the practice of Mr. E. W. Anderton, M.R.C.V.S., Maybole, and the account of it is in his own words :—

An advertising castrator in this district was yesterday (May 23rd) asked to castrate a two-year-old rig. He performed the operation to his own satisfaction, with the result that the next night I was called in to see the animal. I examined it and found that the scrotum had been sewn up with six stiches on each side in such a manner that no pus could possibly escape. With some difficulty I removed some of the sutures, had the parts dressed antiseptically, and administered sodii hyposulphis internally.

On the 26th he took lymphangitis of the near hind leg, and on the 28th he died.

P.M.—Owing to the great mutilation of the parts, a good *post-mortem* could not be made. However, before making any incision through the skin, I inserted my hands into the wounds and grappled first a bowel and then a kidney. On removing the intestines, the specimen I sent to you came out along with them, seeming, as far as I could see, to be suspended in the mesentery. Hoping you can make something from this rambling description, I remain, yours respectfully, E. W. ANDERTON.

The owner's description of the operation is instructive, and shows what courage a plentiful lack of anatomical knowledge may beget.

The case of castration in which you were lately interested took place here on the 23rd ult. The colt (a two-year-old) got no food for twenty-four hours previously ; was "cast" in the usual way, each fore and hind leg being bent down and firmly bound together, so that at no time during the work did any of the limbs get free. When on his back an incision was made in the scrotum of the right side sufficient to allow of the operator's right hand being inserted, and gradually brought towards the back till the arm was in fully half way between the hand and elbow. The testicle seemed difficult to find, and after a time the left hand was tried without success ;

hands were changed alternately for half an hour, when the organ was supposed to be got and taken away. A similar process was repeated with the other side, and the hand put in about the same length, when, after a search of, say, fifteen minutes, the second testicle was said to be got.

The wounds were dressed with a carbolic preparation, and three or four stitches put in each.

When ropes were unloosed the colt rose slowly, and gave me the impression of being injured with the operation. After being put in the loose box he never fed well, drank greedily, swelled much, especially in the left leg, which latterly increased down to the hock and along the belly, death occurring on the fifth day.

The supposed testicles turned out to be omentum fat and pieces of striped muscle, each weighing about half an ounce and had not the faintest resemblance to testicles. The specimens sent by Mr. Anderton, and taken by him from the abdomen *post-mortem*, consisted of a kidney, which was almost diffluent and could not be hardened for microscopical examination.

The other specimen had, at first sight, the appearance of a uterus. It consisted of a closed sac, the wall blue-grey in colour and fibrous looking.

It was nearly square, and measured about 18 inches each way. It seemed to contain a number of large, hard, rounded masses. On cutting into the sac, these rounded objects were found to be adherent to the wall. They each consisted of a membranous covering, containing a structure resembling a testicle, fused to a mass of cartilage and bits of bone, and two or three smaller rounded masses, some filled with curled hair, some with myxomatous tissue, some with a cheesy material.

PERFORATION OF THE URINARY BLADDER.

BY MR. M. J. CLEARY, M.R.C.V.S.

MULLINGAR,
June 11th, 1895.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—Yesterday evening I sent you a bladder (or, rather, portion of a bladder), which was taken from a three-year-old bullock, the history of whose death is: I saw the animal three weeks ago, and at that time he had been two days ailing, and, having received a dose of Epsom salts previous to my arrival, he was purging at the time. *Symptoms*—(1.) Had never previously been unwell; (2.) Slightly swollen, and inclined to lie down; (3.) When put on his feet he would jump about and raise his hind legs very high, and would at intervals moan, as if in pain; (4.) His temperature normal; (5.) Ate and drank well during his entire sickness; (6.) He tried to micturate very often, but was unable, nevertheless, the water came continuously away from him drop by drop; (7.) Examined him per rectum, and found the bladder pretty full. *Diagnosis*—Inflammation of the kidneys. *Treatment*—Lapative food, and tincture of hyoscyamus every six hours. I did not see the animal any more, but he gradually grew more swollen till he obtained an enormous size,

and died about the tenth day after my visit. The owner opened him, and he informed me that, on cutting into his abdomen, at least twenty gallons of urine made its escape. He brought me a kidney which he thought (wisely so) was diseased, and also the bladder.

The bladder had a perforation in it (where I put the twine), which occurred ante-mortem, and from which the urine escaped. The kidney (which fell into the possession of a dog, or else I should have sent it to you), was inflamed and contained a large quantity of lime-salts in its pelvis. I am inclined to think that some portion of the calcareous matter got into the urethra, and consequently prevented the usual flow of urine from the bladder. But apart from this the bullock would have died, as the hole in his bladder would eventually have killed him. I would thank you very much for your opinion regarding the pathological condition of the wall of the bladder, and as to what might bring about the perforation. The calcareous depositions could hardly account for it. Wishing yourself and your father my very best respects, I remain, faithfully yours, M. J. CLEARY.

THE hole in the bladder referred to by Mr. Cleary was evidently of *ante-mortem* origin. It looked as if punched out, the edges were swollen and puckered and the surface round about it was hyperæmic and covered by an inflammatory false membrane. It is probable that the condition arose from the irritation set up by a calculus, very likely one with an irregular surface, and perforation resulting from the consequent necrosis. A perfectly similar case has been recorded as occurring in a bullock, and on opening its abdominal cavity several washtubfuls of *urine* were collected, and here also a perforation of old standing was found in the fundus of the bladder.

LYMPHADENOMA OF THE SPLEEN AFFECTING THE HORSE.

A SPLEEN of enormous proportions was sent to the College by Mr. Bowes, M.R.C.V.S., Leeds, who found it in a knacker's yard, but unfortunately no history of the case and no account of the condition of the other organs was obtainable.

The spleen weighed close on eight stones, was very firm and resistant in consistence. The surface was irregularly studded with eminences, some as broad as the palm of the hand, but not raised much above the surface. On section, the cut surface showed numerous yellowish patches, and the splenic pulp around was darker than normal.

A piece hardened in paraffin and sections stained with hœmatoxylin, rubin and orange, and other sections stained with picrocarmine showed that the disease was lymphadenoma. The adenoid sheaths were greatly increased and were fibrous; the trabeculœ crossed the field as coarse thick bands. In the pulp there was noticed a great increase of the

lymphoid tissue, and at the same time a marked decrease in the number of lymph elements; in some places they indeed seemed to be absent, and the whole of the tissue was a mass of branching cells.

DEATH OF MR. PETER TAYLOR, F.R.C.V.S., MANCHESTER.

WE regret to announce the death, which occurred suddenly on 13th June at his residence, Torkington Lodge, Cheadle, of Mr. Peter Taylor, the chief partner in the firm of Messrs. Taylor and Sons, veterinary surgeons, of Manchester, and was one of the best-known men in his line of business in Lancashire and Cheshire. Mr. Taylor rose to dress as usual shortly after half-past seven o'clock with a view of going to business at Manchester as usual. Whilst in the act of dressing he was seized with illness, which at once prostrated him. Dr. John Godson was immediately called in, and was at first hopeful that his patient's case would yield to treatment. The attack was apparently, however, of a more serious character than the doctor had diagnosed, and about half-past eight o'clock Mr. Taylor passed peacefully away. Mr. Taylor was F.R.C.V.S., and for nearly 50 years has carried on a lucrative business at 2 and 4, Brick Street, Turner Street, Manchester. Year in and year out, whatever the weather, he drove regularly from and to Cheadle, his face and conveyance being perhaps the best known of any that used the road. He stood high in his profession, and was very much esteemed in the locality which for many years he has made his home. During the vicarate of the Rev. P. M. Herford, Mr. Taylor was churchwarden of St. James's, Gatley. His loss will be keenly felt in the country as well as in the town, and the deepest sympathy is on all sides expressed with the widow and family, six sons and one daughter (Mrs. B. H. Bindloss), all grown up, in their sad and bitter bereavement.—*Stockport Advertiser.*

The late Mr. Taylor was the first and only President of the Mutual Benevolent and Defence Association, and he was also President of the Lancashire Veterinary Medical Association. All veterinary associations received his warmest support, and as a member of the Council of the Royal College of Veterinary Surgeons for many

years, all measures calculated to promote the welfare of our profession had a very zealous advocate and supporter in him. The profession has sustained a loss by the death of Mr. Peter Taylor. His force of character and rectitude of purpose commanded the respect of all who came in contact with him. His large circle of friends, which comprised a large number of his professional brethren, deeply mourn his loss.

VETERINARY LT.-COLONEL C. PHILLIPS.

WE learn with much regret of the death of Lt.-Colonel C. Phillips, F.R.C.V.S., Army Veterinary Department, at the early age of forty-four.

This distinguished officer joined the Royal Horse Artillery in 1870, when only nineteen years of age. Soon after entering the service he was ordered to India, where he remained for more than seven years. During this time he distinguished himself by his enthusiastic devotion to his professional duties. His skill and promptitude in India most materially aided in suppressing some very severe outbreaks of contagious disease.

This zealous officer, after only a short stay at home of six months, was selected for active service in South Africa during the Zulu campaign; and in that war he was mentioned in despatches and gained the medal and clasp. After this he returned home, and among other stations served at Edinburgh. At this place he formed a large circle of friends, whom he attracted by his charming social qualities. We knew him as a practitioner of a high order, whose opinion was always valued, being based on the careful observation of clinical facts. He was elected President of the Veterinary Medical Society of Edinburgh; and those who were privileged to attend the deliberations of this Association during his tenure of office could not fail to appreciate the courtesy and tact with which he presided.

In 1884 he was again selected for active service in the Nile Expedition, and was once more mentioned in despatches. At the end of the campaign he was specially promoted to Veterinary-Major for meritorious service in the field, and received the medal and Khedive's star. He remained in Egypt as Principal Veterinary Surgeon in that country until 1888.

On his return home, he was attached to the 13th Hussars, and remained with that regiment until February, 1894, when he was promoted to administrative rank after only twenty-four years' service, and became District Veterinary Officer for Ireland.

In Dublin he devoted almost his entire time to his official duties, and it is feared that his health suffered in consequence. An attack of influenza, from which, under more favourable circumstances, he might have recovered, led to complications which proved fatal on the 14th June, 1895. The army has lost one of its most brilliant officers, and the Army Veterinary Department one of its most promising administrators.

Those who had the privilege of knowing him intimately have lost a sincere and genuine friend.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

THE ANNUAL MEETING.

THE Fifty-second Annual General Meeting of the Royal College of Veterinary Surgeons was held at noon on Wednesday, the 5th ult., at the College building, 10, Red Lion Square, Bloomsbury, Mr. W. Hunting, the President, occupying the chair. The attendance included:—Sir F. FitzWygram, Bart., M.P., Messrs. F. W. Wragg, W. J. Mulvey, J. F. Simpson, J.P., J. Lawson (Manchester), R. C. Trigger, A. W. Mason (Leeds), J. Abson (Sheffield), J. F. Bell, A. L. Butters, J. Hutton (Kelso), J, Ward, E. Faulkner (Manchester), J. S. Hurndall, R. Rutherford (Edinburgh), W. Bower, P. McOnie, A. Gibson, H. A McCormack, H. Kidd, F. Stevens, H. Singleton, J. R. Green (Alfreton), H. G. Rogers, Professor J. Macqueen, Professor Shave, Professor Hobday, Messrs. F. W. Kendall, W. Reekie, F. L. Gooch, J. G. Parr, C. Hunting, J. A. W. Dollar, J. H. Brown, senr., J. Douglas, H. Ebsalft, J. Carroll, A. E. Gostling, J. Legg, H. Jacobs, A. J. Owles, Nicholson, Almond, J. Rowe, J. F. Barford, R. Roberts, and H. W. Hooper.

Admission of Reporters.

The CHAIRMAN: The first thing to which I have to call your attention is the fact that some representatives of the press, seeing an announcement of this meeting, have come here, and are waiting below to know whether they will be admitted. I desire to ascertain your feeling in this matter. There is, I think, one precedent, if not two, for the admission of reporters, but it has not been the rule to have them here, and therefore I do not care to admit them without your sanction.

On the motion of Mr. MULVEY, seconded by Mr. BELL, the gentlemen of the lay press in attendance were admitted.

The Minutes.

Mr. FAULKNER, assuming that the minutes of the preceding annual general

meeting had been printed in the various veterinary journals, moved that they be taken as read.

This was seconded by Mr. KIDD, and adopted.

Council Election.

The SECRETARY (Mr. A. W. Hill) then read the list of successful candidates for nine vacancies on the Council, which was as follows:—Mr. W. Hunting, 789; Mr. Locke, 650; Professor W. Owen Williams, 629; Mr. C. Hartley, 622; Professor Dewar, 578; Mr. Beddard, 531; Professor Pritchard, 525; Mr. Bower, 489; and Mr. Barrett, 487.

Mr. TRIGGER moved a vote of thanks to the scrutineers for their kindness in conducting the poll.

Mr. MULVEY seconded the proposition, which was carried unanimously.

The Annual Report.

The CHAIRMAN: The next business is to receive the annual report of the Council for the year 1894-5. I know you have all had a copy of it. If, however, you wish the Secretary to read it, he will do so.

Mr. TRIGGER: In order to bring it under discussion I move that the report be received.

Mr. BELL: I second the motion.

The CHAIRMAN (after a pause): Perhaps some gentleman will move that the report be adopted, as nobody appears to have anything to say.

Mr. SIMPSON then proposed, and Mr. GOOCH seconded, the adoption of the report.

Mr. WARD said that it seemed to him the new Register, embodying the new rules for the four years course, had simply been issued because the Act of Parliament required the revision and correction of the Register. In its altered condition the Register was no doubt of more value to students and, perhaps, to parents and guardians; but, as regarded the great bulk of the profession, and especially the purpose it was intended to serve, the Register was—to say the least—an untrustworthy production. As such he thought it reflected discredit upon the gentlemen who were responsible for the issue. If there was one duty more than another incumbent upon the Council he thought it should be the accuracy and completeness of the Register. It afforded the only legal evidence of a man's right to call himself a member of the Royal College of Veterinary Surgeons. If a practitioner's name was not correctly entered in the Register or was omitted from it, he lost the privileges of his profession. That he (Mr. Ward) thought was a very important thing. Hence he held that it was one of the principal duties of the executive of the College to attend to the Register on behalf of the generality of the members. He did not know who was to be censured in this matter, whether the person blameable was the President or the Secretary, or whether the whole Council was at fault and deserved to be censured. He did not think they should hide themselves and seek to escape behind a sub-committee. He thought that one reason why the Council were indifferent as to the Register was the fact that it did not pay. It was said not to pay, and that there was a loss of between £40 and £50 in regard to its publication. However that might be, his belief was that eight-tenths more books were ordered than were necessary or were sold. That would account somewhat for the loss incurred, but if the expense of issue was double what it was, seeing that the Register was the legal basis of their privileges, it was the bounden duty of the Council to make the book as accurate and complete as possible. That was a duty they owed to every member of the profession. In the present Register certain practitioners were described as being "deceased" who were still alive and exercising their calling. Quebec

was described as situated in South America, and Whitechapel was located in the Parish of Kennington. And there were other similarly absurd mistakes: in fact, he believed their President was conscious of nearly 500 blunders. Nor were these printer's errors, but mistakes known and uncorrected before the "copy" was delivered to the printers. He thought that the President had remarked that "it didn't matter whether the book came out right or wrong so long as it was published." That was not his (Mr. Ward's) opinion. He contended that the Register, when printed, should be as correct and complete as possible.

Mr. HURNDALL said he noticed on the credit side of the balance-sheet the item "Law charges, £212 1s.," as to which he desired to have some further explanation. He wished to know what proportion of those charges was expended in prosecuting registered shoeing-smiths who had offended against the Veterinary Surgeons Act. Then he observed a delightfully vague sort of paragraph in the report relative to "The Registration of Farriers." It would be very satisfactory to those who, like himself, had opposed this examination of farriers, to know the kind of examination to which the farriers were subjected. It was within his knowledge that a number of men had passed who were utterly unfitted for the position of farriers. The report said that registration was "only obtained after a practical test of the candidate's ability to make shoes and shoe a horse, and, after an oral examination, testing his knowledge of the construction of a healthy foot." That was a very vague sort of statement. Well, a number of members of the veterinary profession felt that this College should be dissociated from the joint committee conducting these examinations, a committee consisting of representatives of the Worshipful Committee of Farriers, of the Royal Agricultural Society, and the Royal College of Veterinary Surgeons. A special meeting of the profession was called and passed a resolution against the College continuing to countenance these examinations. The resolution was ignored, but he thought the members of the College were entitled to a fuller explanation than the paragraph he had read contained. He asked the President or the gentlemen who had undertaken these examinations to give the meeting some idea of the sort of tests to which farriers presenting themselves for examination were subjected. Some members of the Council had treated the resolution of the special meeting of members—the only special meeting which had ever been called—in a light-handed manner, simply because the meeting was sparsely attended. The paucity of attendance, he contended, did not detract from the importance of the resolution adopted, and which seemed to have been ignored entirely. To speak plainly, he thought the Council, having regard to this resolution, should have taken steps to prevent any representative of that College serving in future on this Farriers' Registration Committee. The Council had a distinct view of what the opinion of the profession was in this matter. It did not suit the Council, however, to adopt the course he had suggested as proper in the circumstances, but they simply went on ignoring the resolution, and acted as though no trouble had been taken in convening a meeting and ascertaining the views of the profession on the subject. He asked for some little further information on this matter, and also what proportion of the £212 expended on legal charges was disbursed in prosecuting registered shoeing-smiths who had offended against the Veterinary Surgeons Act.

The CHAIRMAN: I take it you will not expect me to answer you just now. I will wait until I can answer all the questions at once.

Mr. HURNDALL: Whatever you like. I daresay you will suit your own convenience in this as well as in all other matters.

The CHAIRMAN: I will try to.

Mr. R. RUTHERFORD said it might be thought that occupying, as he did, an

official position in the College, his mouth was shut; but he was not going to allow his official position to override his rights as a member of the profession, and to refrain from saying what he thought of some of the contents of the report. He begged to draw their attention, first of all, to the paragraph which said, "The system of marking adopted at the examinations has been altered. In place of the terms 'very good,' 'good,' 'sufficient,' 'bad,' the Council has decided that numbers shall be used. The maximum is represented by 100, and a minimum of 45 per cent. is required to qualify for a pass." Now, why in the name of wonder the Council had thrice, in the last ten or twelve years, altered the system of marking just when the system last adopted was getting into good working order was "one of those things," as Lord Dundreary said, "that no fellah could understand." He, for one, particularly failed to see where the advantage of numbers over the old system came in, and he did know that the former plan had many disadvantages, some of which, he was sure, were never anticipated by the Council when they framed their new rule. He could not conceive of a better system of marking, or one which more readily described a man's sense of another's mental condition than the use of the words "very good," "good," "sufficient," "bad." He denied that an examiner could so correctly assess and gauge the capacity of a student as to pass him with 45 marks and reject him with 44. Speaking of the examiners collectively he asserted that they were quite satisfied with the old system. As practical veterinarians it was much easier for them to say that a man was "good," or "sufficient," or "bad" than to assess him by numbers which conveyed a very poor idea of a man's position as a student. Passing to another part of the report, he read that there were 33 complaints against members of the College or registered practitioners for "unprofessional advertising." Now this phrase was one of those beautifully ambiguous phrases for which the Reports of the Council of that College was celebrated. This was another instance of what was often said, namely, that there was not a single bye-law or regulation of the College through which a coach and six could not be driven, or which might not be turned upside down. What was meant by "unprofessional advertising"? In his ignorance, he had always thought that all advertising was unprofessional. What was professional and what was unprofessional advertising? If there was such a thing as unprofessional advertising, it logically followed that there must be a kind of advertising that was professional. If the Council meant that a young man who had passed must make a livelihood, and be allowed to this end to circulate a business card, why did they not plainly say so? If the Council meant, on the other hand, that practitioners might advertise in the columns of newspapers, amongst the list of horse sales, that they were this, and that, and the other thing, then why did not the Council say so also? They must not deal in ambiguities. There was a worse offence than unprofessional advertising, and that was solicitation, which was becoming quite common. They had solicitation in Edinburgh, he was sorry to say. They had had a remarkable outbreak of it within the last five or six months. In a paragraph in page 5 of the report it was said, "The new Register, during the past year has undergone many alterations and revisions, and contains the new rules and regulations regarding the four years' scheme." Now he had often heard that there were a large number of unemployed literary men in London. Might he suggest that in charity one or two of those men should be called in to revise the new register, so that it might be turned out a little grammatically, and in such a manner that one rule should not be found to override another. He thought the rules—many of which were impracticable and unworkable—might be cut down to one third their present extent. Turning to the balance sheet on the last page of the report, he found that "delegates expenses" amounted to £72 os. 4d.

This was the cost incurred by the present system of constantly ascertaining what went on at the examinations. Was the game worth the candle? He asserted that it was not. He had seen the delegates who attended the examinations in Edinburgh from London. They were very nice gentlemen who went about their business in a very quiet sort of way, but whether they rendered services to the College worth £72 was a question he was inclined to argue. He did not assess the value of their services at 72 shillings. In the present financial position of the College, and seeing that they would have to face a diminished income for the next few years, he thought that this expense was one which might well be dispensed with. He did not see the necessity for any expenditure of the kind.

Professor MACQUEEN said that while previous reports of the Council had evoked his complaints, he must say that the present production met with his sympathy and satisfaction. He rose for the purpose of calling the attention of the meeting to an entry on the third page of the report; under the head of "Prize Funds" occurred this paragraph:—"The Jubilee Memorial Fund collection, in commemoration of the year 1894, and of the petitioners for the original Charter of Incorporation, is not yet closed. Subscriptions are still coming in, and the Council believe that after paying for a suitable mural tablet in the College building, a handsome balance will be available for the establishment of some kind of annual prize.' Why the word collection?" It was not a Jubilee Memorial collection. It was never intended to be a collection. "Subscriptions are still coming in," say the Council, "and the Council believe that after paying for a suitable mural tablet in the College building, a handsome balance will be available for the establishment of some kind of annual prize." He would remind the Council that on the 28th November, 1894, Mr. Trigger, the Chairman of the Memorial Committee, submitted to the Council a resolution which the Council confirmed. He would read a resolution because it showed at once that the description of the so-called "collection" was not in accordance with the fact. The resolution was:—"That the memorial take the form of a scholarship or bursary to perpetuate or recognise the services of the gentlemen concerned in the inauguration of the Royal College of Veterinary Surgeons. Now, why should this undertaking be so rudely pushed on one side by the Council in its annual report? That might be the fault of the Publication Committee; it was apparently the fault of some one. As the secretary of the memorial movement, he objected to its object being misrepresented. The misdescription might, he was willing to allow, be the result of an oversight. At the same time he thought it was necessary for him to call the attention of the Council to the matter, and to remind them of the undertaking they adopted. If subscriptions were not coming in quite so quickly as one might expect, it was because the Jubilee Memorial was not very well advertised. If they could obtain the assistance of the veterinary press, if they could secure the aid of the executives of the Jubilee Memorial Committee, there was not the slightest doubt but that the members of the profession would contribute, and it was principally to call attention to the omission of many members of the profession to contribute that he spoke on that occasion. Mr. Rutherford complained of £72 being paid for delegates expenses. As he (Professor Macqueen) read the report the expenses were for a "delegate's" expenses, and if that was the cost of a single delegate he thought it was a most expensive luxury, and that it was advisable to dispense with his further services.

The CHAIRMAN pointed out that the apostrophe should have come after the "s" and not between the "e" and the "s." This was a printer's blunder. Delegates and not delegate were meant.

Mr. PARR complained that so scanty a reference appeared in the report to

the subject of the relations of the veterinary profession to the Board of Agriculture which, according to the veterinary journals, was one of the most important matters that affected the profession. The report after stating that the Council had sent their protest to the Board and had received a reply which "answers no question raised," apparently left the matter there. Were they going to let it rest there? This was just one of those things in which the Council should have taken the initiative, and not awaited the reception of resolutions from veterinary medical societies before acting.

The CHAIRMAN: If no one has anything further to say I will endeavour to answer one or two questions which have been put to the Council.

Mr. Ward told us that the Register ought to be correct and complete, and he blamed the Council for its not being so. Well, we agree with him that it ought to be, and we are only too sorry that the members of the veterinary profession will not permit us to keep it either complete or correct. You will be surprised to know that when we sent voting papers out we had 200 of them returned this year marked "gone away," "address not known," or something of that sort. Now in those 200 cases we know what to do, but there are plenty of others who only turn up when they are described in the Register as "dead" or who, if omitted, write protesting against their names being left out, some two or three years after we have been told by their friends that they have shifted. In the face of such facts as these, I ask how is it possible to keep this Register correct. One way gentlemen may help us, and that is by informing us of the incorrect particulars of which they are individually aware. Complaints sometimes arise because a member of the Conncil tells us of the death of an old friend and the latter is put in the list as "deceased." The old friend writes an abusive letter to say that he is not dead.

Now as to the law charges amounting in the aggregate to £312, Mr. Hurndall wants to know what proportion of those charges had been spent in prosecuting registered shoeing-smiths? Not twopence. There has not been a single shoeing-smith prosecuted, but there is a prosecution pending against one registered farrier. It may interest you to know that for using the words "veterinary shoeing forge" there have been fifteen complaints and only one out of fifteen men complained against is a registered shoeing-smith. Now,—I am going to say something more, but there is a good old proverb which says "Let sleeping dogs lie."

Then we are asked to give particulars as to the sort of examination passed by registered shoeing-smiths. We have nothing to do with the nature of the examination. The annual report before us is only a report of what the Council have done.

Mr. Rutherford finds fault with the system of marking now adopted. Well, it has been pretty thoroughly discussed, has been agreed to by the Council, and the examiners. Mr. Rutherford also illustrates his arguments by pointing out the difficulty of determining whether a student should be rejected simply because he failed to get 44 instead of 45 marks. Well, it might be rather hard to reject that man if he had done well in other respects, but a line must be drawn somewhere in every system. Even when an examiner had to draw the line between "good" and "bad" in his own mind he must draw it somewhere. We thought that when numbers were used instead of words, and the examiners had to mark every paper and every student, the examiners would be much more careful, and therefore the examination would be fairer to the student. When an examiner has to mark numbers instead of "good" or "bad" or "indifferent" he is much more careful, if he does his duty. Of course a personal equation comes in here as in everything human. An examiner may be a very good examiner and yet perhaps not possess quite as much common sense as he might have. That we cannot help. We endeavour to select the best men, and one of their

attributes is common sense if we can get it. Mr. Rutherford complains of one sentence in the report being ambiguous, and another gentleman said something about the ambiguous phrases used by the Council which he should like clearly defined. Well, so would we. We should like everything clearly defined if we could get it, but we are much too wise to try and do it. I think it was Sir Wm. Harcourt who the other day said, "Do not try to give a definition of anything." I would add to that, "Don't try to define anything too correctly." If you try to define precisely what are and what are not offences against the Veterinary Surgeons Act, some day you would have exactly the same complaint which Mr. Rutherford has made in reference to the difficulty of determining whether a man should be rejected with 44 marks and accepted with 45. Everybody who wanted to do wrong would (given a precise definition) go as near the edge of the offence as possible. Hence we should be in no better position than now. Let us leave it indefinite. I think there is a considerable amount of virtue in mystery. There is nothing more impressive than mystery, and so let us leave this matter as mysterious as an Act of Parliament can make it.

Alluding to the expenses of delegates, one gentleman said he did not consider the services of those gentlemen were worth 72 shillings, to say nothing of £72. Well, I do not know. Remember one thing, and that is that we have no examiners on our Council now. We did away with that dual appointment. Having no examiners on the Council, it is necessary for members of the Council in some way to make themselves acquainted with the method in which the examinations are conducted. Perhaps you would let them travel at their own expense. That is kind of you, but if you want your work well done, and expect men to come up to London—400 or 500 miles—10 or 12 times a year, and expect them to spend one or two days attending the examinations in Edinburgh, the least you can do is to pay their railway fare; and that is all we have done.

I am very glad to note that Professor Macqueen describes the report as giving him general satisfaction. He will pardon me for saying that when a report affords him general satisfaction, it ought to yield satisfaction to everybody else in the room. However, not to be outdone, he had to find fault with something, and therefore he tells us how basely, or shamefully, the Council had treated the Jubilee Fund Committee. I wondered what was coming. I thought the Professor was going to describe something dreadful. Then it appeared that the gravamen of our offence was that we had described the object of the movement as the award of an annual prize. Nothing of the kind was intended by the supporters of the movement, said Professor Macqueen. The idea approved was to have a scholarship or bursary. I am not prepared to say what is the difference between a scholarship or a bursary and an annual prize. Not knowing this, and pleading guilty to the general ignorance which pervaded the Council on the subject at the time they drew up this report, I will pass from the matter by offering Professor Macqueen an apology, and by remarking that the offence was unwittingly committed.

Much to our astonishment, Mr. Parr accused us of not doing our duty in relation to the Board of Agriculture, and he asked what had we done. Well, we formed a committee and prepared a report, and a report on this subject was not written in five minutes. We sent the report to the Board of Agriculture, and got a reply. We have besides sent copies of our report all over the kingdom, we have sought the aid of Members of Parliament, and we have done a number of things. But, Mr. Parr, as a business man will not, I am sure, desire the Council to publicly show their hand and say what they are going to do. We have reserved a little up our sleeve against the big fight which will doubtless ensue when the civil service estimates are considered.

Well, gentlemen, I think having answered all the questions put, I will now submit the motion.

The motion for the adoption of the report was then put and carried unanimously.

The CHAIRMAN intimated that a dinner was to follow in the evening at the Holborn Restaurant, to which he invited as many gentlemen as could possibly attend.

On the motion of Mr. FAULKNER, seconded by Mr. REEKIE, a cordial vote of thanks was accorded the Chairman, with which the meeting ended.

The dinner held in the evening was largely attended and successful. Mr. Hunting presided.

In the list of successful candidates from the New Veterinary College the name of Mr. W. M. Ogilvie should appear as having passed the B examination.

THE CENTRAL VETERINARY SOCIETY.

THE usual monthly meeting of the Society was held on Thursday night, the 4th April, at the Royal College of Veterinary Surgeons, 10, Red Lion Square, Bloomsbury, Mr. S. Villar, the President, occupying the chair. The other Fellows present were:—Messrs. A. L. Butters, Vet.-Capt. E. R. C. Butler, A.V.D., Joshua K. Bruce, Alfred Broad, H. W. Caton, Jno. A. W. Dollar, Henry Edgar, Henry Gray, Prof. F. Hobday, W. Hunting, G. C. Lowe, C. Lowe, Profs. J. Macqueen, J. McFadyean, F. C. Mahon, Hon. Sec., J. H. Manton, W. J. Perryman, Professor J. Penberthy, R. Porch, Charles J. Reakes, F. H. Ridler, A. Rogerson, H. G. Rogers, J. Rowe, Hon. Treasurer, F. G. Samson, Hugh Singleton, J. E. Tooth, F. Wragg, J. Woodger. Visitors: Messrs. A. Bury, F. Dowell, G. E. Cawford, C. Dimmick, Morgan Evans, V. Gazi, Osborne J. Hills, F. King Shaw, G. H. Kitchin, H. M. Lenox Conyngham, F. B. Lowe, E. W. Parks, F. Richardson.

On the motion of Mr. H. W. CATON, seconded by Mr. F. G. SAMSON, the minutes of the preceding meeting were taken as read and were confirmed.

Absentees.

The HON. SECRETARY (Mr. F. C. Mahon) announced the receipt of communications intimating the writers' inability to attend from Mr. B. Freer, of Uppingham, Mr. J. Roalfe Cox, Mr. A. Prudames, Mr. J. S. Hurndall, and S. H. Slocock. He also read a letter from Mr. W. Perryman, 50, South Lambeth Road, S.W., thanking the Society for having elected him a member.

New Members.

A ballot resulted in the unanimous election of the following gentlemen:—Messrs. Ridler, M.R.C.V.S., Silver Street, Notting Hill, W.; John Baxter, Horse Department, G.N.R., King's Cross; E. M. Jarvis, South Kensington, S.W.; Harold Sessions, M.R.C.V.S., Dyke Road, Brighton.

"GLANDERS."

Resumed Discussion on Professor McFadyean's Paper.

Professor MACQUEEN said: Mr. President and gentlemen, unfortunately I did not take the opportunity of taking notes while Professor McFadyean was delivering his address, and I hardly think that the summary presented to each of us (a printed summary distributed among the members) gives a fair abstract, or sufficient abstract—for my purpose at least—of the address to which we had the pleasure of listening. But, in the remarks that I wish to

make, I shall have to confine myself to the statements made in the summary; and that, perhaps, will be quite sufficient to enable me to comply with the rules of the Society, the precedent of discussion, and the discipline of debate. The first point to which I should like to direct your attention is the history of glanders—not so much the history of glanders in other countries but the progress of the disease in this country. I should like to know whether glanders is on the increase, whether it has increased within recent years, or whether it is gradually disappearing. I can only obtain returns up to 1890, and apparently the disease was on the increase up to that year. That was, of course, before the days of mallein. The returns since 1873 have dealt with farcy as well as glanders. Until 1873 farcy was not recognised as a contagious disease, so that, in estimating the number of cases, one requires to add the farcy cases to the glanders cases, and the numbers work out in this way: In the sixteen years—that is, from 1874 to 1899—there were 14,506 fresh outbreaks of farcy and glanders, and 22,629 horses attacked. The largest number of horses attacked in any one year was 1346 in 1880. Coming to 1890, I find the number of horses attacked in that year is 1808. That includes farcy and glanders. The fresh outbreaks in 1890 are 951. Now, perhaps, Professor McFadyean can inform us if the number of horses attacked and the number of outbreaks have increased or diminished since 1890. I notice that the essayist refers to the early opinion regarding the disease being contagious. There is no doubt that glanders was considered a contagious disease in very early times. In addition to the observers or authorities mentioned by the professor, I find some five or six others, and they all apparently strongly believed in the contagious nature of glanders. There are, besides, Solleysel and Bourgelat, Gohier, Volpi of Milan, Delwart, Vitet and Dutz, all of whom maintained that the disease was contagious. Our own countryman, White, in 1837, strongly maintained the contagious nature of glanders. Lafosse was doubtful as to the contagious nature of glanders, maintaining that it was sometimes contagious, while at other times it was not. Coleman, whose teaching is no doubt responsible for a good deal of error regarding glanders, did not believe in the contagious nature of the disease. Then there is Percival, to whose books I might refer you for, perhaps, the best history—the best account—of glanders that has been written up to the present time. I do not refer to recent researches in pathology but to the history of the disease, which is detailed at considerable length. In one volume there are no fewer than 200 pages devoted entirely to the history and contagion of glanders and farcy. As to the cause of glanders, I believe it is no longer disputed, but there are probably some contributing causes which are worth remembering—contributing causes that are often summed up in the word "susceptibility." I should like to hear the essayist's opinion regarding "susceptibility" in relation to glanders; whether he believes excessive work or insufficient food, or food of a poor quality, or defective stabling is a contributory cause? I am very much inclined to think that a great many cases of glanders originate in dark stables where defective drainage and ventilation are well marked, where susceptibility is almost beyond question. Then the essayist says that the glanders bacillus may reach the blood, and that "it was doubtful whether it could be detected in the secretions or excretions; and, although it doubtless at times reached the blood current, there were reasons to believe that it does not long retain its vitality there."

Professor McFadyean: I do not think I have said that, Professor Macqueen.

Professor Macqueen: I am quoting the last paragraph in the summary before the paragraph headed "mode of infection."

Professor McFadyean: I said that it (the bacillus) did not long remain there (in the blood current).

Professor MACQUEEN (continuing): I wish simply to recall to your mind some experiments performed by Cadéac and Malet on the infectivity of the blood. They succeeded sixteen times in transmitting glanders by inoculations of the blood of glandered horses, and they failed thirty-five times. Then the next point in the summary is that the detection of the bacillus in secretions or excretions, is doubtful. Now, this is rather important, and I hope you will excuse me if I try to draw some attention to it. If the bacillus is doubtful, if it cannot be detected in the secretions and excretions of a glandered horse, how does infection occur in cases of occult glanders, by which I mean those cases of occult or latent glanders where there is no discharge, no submazillary swelling and no external symptoms; where there is nothing to indicate the presence of glanders until the horse is subjected to a mallein test, and a *post-mortem* examination reveals tubercles in the lungs. My point is this: Is a horse with only tubercles in the lungs a dangerous animal in a stable? I want to know what Professor McFadyean thinks; whether he thinks that such a horse can communicate the disease to another horse. Another question on the point I should like to put to the Professor. At what stage of the disease do the lung lesions become infective? and in order to simplify the question a little I should add that I mean at what stage of the lesion is it capable of giving off the bacillus or that infective material which is exhaled or passed out by the glandered horse, and how long may an animal affected with occult glanders continue in contact with a healthy one without danger to the healthy? If a horse with no external symptoms of glanders is not a dangerous horse in a stable otherwise healthy, then it becomes a question whether occult glanders is quite of that importance that we have all along thought. There must be many horses which do not show any symptoms—neither nasal discharge nor ulcer nor submaxillary swelling—and which yet contain glanders tubercles in their lungs; and I want to know if such horses are capable of infecting others in the usual way? The vitality of the virus is another question as to which I desire information. I have no recollection of Professor McFadyean touching the point in his address, but my calling his attention to the omission may be forgiven if he will complete his statement and tell us about the vitality of the virus, because it has rather an important bearing upon the suppressive measures to be taken after an outbreak.

The next question is the radius of infection. I should like to know how far off a healthy horse may stand harmless from an infected one; whether a healthy horse, before it can be infected, must come into actual contact with or in close proximity to an infected one, and if so, within how many yards? What is the infective radius of glanders? If I understand the Professor aright, he said that glanders bacillus, or its product, is not inhaled as a gas, and that it is only after the discharge is dry and volatilized that it enters and is diffused in the atmosphere of the stable. Then, according, I will say to his learning, it is inhaled by the sound animal. I want to know whether there is any distinction as to radius. Next, I want to know the condition of the infecting material—its condition at the time of infection. Does it pass into the horse in the form of an impalpable powder, in the form of vapour, or as the bacillus itself? Regarding the mode of infection, I daresay everyone is agreed that wounds may be infected, that infection may take place through the skin. But Professor McFadyean denies that infection can take place through the intact skin, and asserts that infection takes place through the respiratory tract, and only occasionally through the alimentary canal. The essayist will, doubtless, remember some experiments performed by Babes, to prove the possibility of infection through the intact skin, and he succeeded in proving—to his own satisfaction, at all events—that infection took place through the hair follicles.

Professor MCFADYEAN: Was that glanders?

Professor MACQUEEN : Yes.

Professor MCFADYEAN : In the horse ?

Professor MACQUEEN : I think so. I have little to say with regard to the mode of infection which is called respiratory, beyond remarking that Renault for twenty years experimented as to the mode of infection in glanders long before Cadéac and Malet, and there is no doubt that Renault only succeeded six times out of many trials. But unfortunately the details of Renault's experiments are missing, so that although his experiments are often mentioned, yet there is no very satisfactory account available as to how they were carried out. I notice, however, in quite a recent discussion that Chauveau maintains, I believe on very good authority, that Renault's experiments were conducted with very great care and that they never proved to his (Renault's) own satisfaction that glanders was very often transmitted by the respiratory tract. Cadéac and Malet tried to transmit glanders by intratracheal injections and failed to produce the usual glanders lesions. They only succeeded in producing localised lesions—bronchitis and pneumonia, but no tubercles. Passing now to the digestive tract—to infection by way of the digestive tract—here Renault again was the first who conducted a long series of experiments by mixing horse foods with glanders material, sometimes succeeding and sometimes failing. Then there are the experiments of Cadéac and Malet alluded to, I believe, by Professor McFadyean in his paper. Cadéac and Malet employed various materials such as pieces of glandered tissue, nasal discharge, tubercles and pus, with which they fed their subjects, and in many cases the result was negative. They concluded that it was necessary, in order to infect through the digestive tract, to have a wound in the mucous membrane. Coming to a later period—so late as the summer of last year—we find that Nocard, who up to that time held the opinion that glanders was transmitted through the respiratory tract, had somewhat modified if not altogether changed that view. In April last he happened to have in his possession a mule which he kept for a period of four months under observation, testing and retesting it with mallein to satisfy himself that it was entirely free from the infection of glanders. He then commenced his experiments by feeding the animal with a potato culture of glanders bacilli enclosed in a sort of sandwich. After a certain time he succeeded in infecting the mule, and a *post-mortem* examination revealed lesions of glanders in the spleen, and also, I believe, in the lungs; but speaking from recollection, I am not quite certain of this. That is the first reported experiment conducted with cultivated glanders bacilli. Since then, he has experimented with two horses and an ass, using bacilli on each occasion, and every time succeeded in infecting the animals through the digestive tract. In May of last year he reported to the Central Veterinary Medical Society of Paris the result of these three last experiments. The mule was killed, the ass died twelve days, one horse died nine days, and the other horse fifteen days after receiving the glanders bacilli. In concluding his report to the Central Society, M. Nocard makes the following remarks :—"The experiments that I have made and that I am pursuing have fully convinced me of the danger of pails, mangers, and common drinking troughs." He also refers to Cadéac and Malet's experiments, and he maintains that the bacilli can enter the system without an abrasion of the mucous membrane of the digestive tract. He is supported in this by Chauveau, who states, as the result of his own experiments, that glanders infection may occur without abrasion of the mucous membrane. The discussion was closed by Leblanc, who remarked that the propagation of glanders through the digestive tract was well known, and that when he was sanitary inspector for the district of the Seine he reported that one of the principal causes of the propagation of glanders amongst cab horses was due to watering out of the same buckets on the

public roads." Apart from these experiments which, though not numerous, serve to show the possibility of infection through the digestive tract, there are those rather rougher experiments occasionally reported from Zoological Gardens where animals fed on raw horse flesh sometimes die of glanders. There are several cases on record, and I am very much inclined to urge that the digestive tract should not be lost sight of as rather a frequent pathway for the entrance of the organism or infective material of glanders. I noticed that Professor McFadyean referred to the absence of lesions in connection with the stomach intestine—the absence of lesions in the mesenteric glands—such as one would expect if the infection took place through the alimentary tract; but it is possible that the digestive fluids may have some kind of modifying influence upon the bacilli when taken with the food, and that influence may be equal to preventing local lesions. I throw out this hint which may suggest another view to some other member of this Society. If the bacilli pass from the digestive tract by the lymphatics, it is quite likely they will be arrested in their progress in the mesenteric glands, and if they are taken up by the blood stream then, of course, they ought to be arrested somewhere in the liver. But the question arises if the capillaries of the liver, if the vascular system of the liver is not on rather different principle from that of the lungs, so that the organism may pass through the liver without being arrested, whereas it cannot so easily pass through the lungs.

As to the distinction between the acute and chronic forms of glanders. I believe that this distinction was first made by Coleman. I quite agree with Professor McFadyean that acute glanders is not often seen now, but that is not the fault of glanders. It is because a great deal more attention is paid to nasal discharge—a great deal more suspicion is excited in the practitioner by nasal discharge, and "doubtful" horses are not allowed to live so long as formerly. I remember a time, not so many years ago, when acute glanders was rather common. I refer to a time when the glandered horse had a well-marked discharge from one or both nostrils and a submaxillary swelling, when the breathing was noisy or audible and horse in distress, when the temperature was 106, 107, and when the animal was killed the whole interior of the nasal chamber was found infiltrated and ulcerated, the lining of the trachea in a similar condition, and both lungs more or less affected with glanders' lesions. That was the kind of case called "acute"; it is not often seen now, but I remember the time when it was not at all uncommon.

I think Professor McFadyean is well aware of the many experiments that have been performed—some successfully—to ascertain the curability of glanders. It will not do harm to give some of the information and to recall the main facts to the Professor's memory. One observer maintains that when the bacillus of glanders is passed through cats a mallein can be obtained from the blood and organs of the inoculated cat which can be used in the cure of glanders. For instance, one observer—his name, I think, is Bonome—has proved by experiment that by giving fourteen injections in forty days of the mallein obtained from a cat inoculated with glanders, he can get rid of all symptoms of the disease in a horse. By a similar process the same observer cured glanders in dogs but failed in the case of guinea-pigs. There is one authority on glanders whose name is very frequently quoted, I mean Semmer. Last year he contributed quite a long article on the subject of glanders, particularly concerning the curability of the disease, and he refers to the work of two Algerian veterinary surgeons, Decroix and Bougome. These gentlemen are said to have cured numerous cases of farcy by the cauterisation and extirpation of farcy ulcers, a practice that was very common in this country some years ago; and, so far as the external appearance, the general behaviour and well-being of the animals afterwards were concerned, the cases were apparently cured. Semmer also alludes to experiments in regard to the

curability of glanders carried out at Turin by Brusaco and his pupils, who are said to have cured 50 per cent. of glandered horses by treating them with carbolic acid, iodine, sublimate, and ferri sulph. Levi and J. Neumann claim to have cured horses with tracheal injections of iodine, and potash iodide. In France they have adopted a mode of treatment and succeeded to their own satisfaction by giving glandered horses creosote in oil hypodermically. Semmer, alluding to his own work, in conjunction with Itzkovitsch, states that they witnessed recovery in a notorious case of inoculated glanders and farcy in a filly at Dorpat. Semmer further refers to the action of ox blood serum as being useful in the cure of glanders; and in this he is supported by another observer called Barbes, who maintains that ox blood serum has a beneficial therapeutic action in glanders. Then there is Pilarios, who cured eight glandered horses in the first stage of the disease by repeated weekly injections of mallein. There is another case of cure—in the human subject—reported in *The Veterinarian* of last year. This case, too, was treated by frequent injections of mallein. Following similar lines Helman, who name has been mentioned in connection with the discovery of mallein, has cured one case of glanders. The horse was subsequently tested with mallein and failed to react. Injections of blood serum from this horse applied to cats and guinea-pigs reduced the predisposition of these animals to glanders. I gather that Semmer prefers ox blood serum to mallein in the treatment of glanders. The serum has more effect on the bacilli, which when exposed to ox serum lose much of their virulence. To prevent misunderstanding, I ought to say that a glandered horse is said to be cured when it ceases to react to mallein. So much for the curability of glanders. Referring to the symptoms, I am glad to see that Professor McFadyean has taken the trouble to notice the symptoms of glanders, because it is high time that the text books were revised with regard to the symptomology of glanders; and I must congratulate the Professor (if it is possible for me to congratulate him), upon the symptoms which he lays down in the summary of his paper. With the diagnosis of glanders, as given in the summary, I agree, and consider that there are numbers of cases which are not diagnosable by any means short of the use of mallein. Horses that are healthy to all outward appearance, injected with mallein, are found to react, and when killed, their lungs show the characteristic lesions. With regard to mallein itself, I have a few words to say. I want to know—if I can obtain the information—how mallein acts. That it is effective, that it is potent, that it has an extraordinary action, no one who has used it can deny. It raises the temperature, it causes a swelling at the seat of injection, it makes some horses yawn, causes some of them to lose control of their limbs, to stagger, and to fall lame; it affects the appetite, and upsets the horse generally. If a small quantity of this material called mallein, has such effect upon a horse in which *post-mortem* examination discovers a few tubercles in the lungs, we cannot withhold the belief that it must be a very powerful agent.

(*To be continued.*)

BOMBAY VETERINARY COLLEGE.

Professional Examinations of the Bombay Veterinary College for 1895 were conducted by a Board of Examiners composed of the following gentlemen:—President, Veterinary-Captain J. W. A. Morgan, Superintendent, Civil Veterinary Department, Bombay Presidency; Members, Veterinary-Captain H. M. Maxwell, Superintendent, Civil Veterinary Department, Beluchistan, Veterinary-Captain H. T. Pease, Assistant to the Inspector-General, Civil Veterinary Department; Dr. M. G. Deshmukh, M.D., B. Sc., B.A.; Veterinary-

Lieutenant E. W. Larnder, A.V.D., Assistant Principal, Bombay Veterinary College; Mr. N. D. Dhakmarwala, G.B.V.C., Lecturer on Anatomy, Bombay Veterinary College; Mr. V. E. Vakharia, G.B.V.C., Lecturer on Chemistry, Bombay Veterinary College; Secretary Veterinary-Captain James Mills, A.V.D., Principal, Bombay Veterinary College. The Board commenced their work on 19th April, 1895, and examined 51 students. Out of fourteen students that presented themselves for the Third Professional Examination, nine passed; out of eleven, nine passed in the Second Professional Examination, and out of twenty-six, nineteen passed in the First Professional Examination. The following is the list of students who passed the different examination :—

The Third Professional (Diploma) Examination :—First Class—G. D'Silva, Hassen Aly, Subramani, and A. P. Edibam; Second Class—F. D'Silva, C. Engel, W. Buckel, V. K. Vairagkar, and I. G. Joshi.

Second Professional Examination :—First Class—H. Foy, E. T. Hoole, W. R. Mudliar, and A. I. Shaikh; Second Class—S. E. Benjamin, D. H. Chitnis, D. B. Mamtora, F. K. Desai, and C. Buckel.

First Professional Examination :—Second Class—A. J. Ansari, A. K. Duberia, R. W. Simpson, E. H. Brand, C. G. Mehta, M. C. Joshi, Abdul Rahiman, J. F. Valladares, T. K. Daru, V. G. Thakur, J. Coaroy, B. Basu, K. J. Bhatt, and D. S. Kapadia; Pass Class—K. Runganah, W. Stephens, N. K. Malandkar, S. G. Shirgaonkar, and C. B. Antia.

The following is a list of prizes that were awarded :—

(1) The Hon. Mr. Justice Bayley's prize of Rs. 50 in books and instruments for the best students at the Third Professional Examination was awarded to G. D'Silva; (2) M. R. Ry. Man Mull silver medal for the best Hindoo student at the Third Professional Examination was awarded to Subramani Mudliar; (3) Veterinary-Captain J. Mills' prize of Rs. 30 in books and instruments for the best student in Operative Surgery was awarded to G. D'Silva; (4) Government Silver Medal for the best student in soundness was awarded to F. D'Silva; (5) Veterinary-Captain J. W. A. Morgan's prize of Rs. 32 in books and instruments for the best student in Obstetrics and Breeding was awarded to Subramani Mudliar; (6) Veterinary-Captain J. Mills' prize of Rs. 25 in instruments for the best student in shoeing was awarded to G. D'Silva and Subramani Mudliar; (7) Mr. J. Mollison's prize of Rs. 25 in books and instruments for the best student in Hygiene and Sanitary Science was awarded to Subramani Mudliar; (8) Sir D. M. Petit's prize of Rs. 40 in books and instruments for the best student at the Second Professional Examination was awarded to H. Foy; (9) Sir D. M. Petit's prize of Rs. 20 in books and instruments for the best student in Anatomy and Physiology at the Second Professional Examination was awarded to H. Foy; (10) Mr. J. M. Doctor's prize of Rs. 25 in books and instruments for the best student at the First Professional Examination was awarded to A. J. Ansari; (11) "Steel" Memorial Silver Medal for the best student in the handling of animals was awarded to R. W. Simpson; (12) Mr. N. D. Dhakmarwala's prize of Rs. 20 in books and instruments for the best student in Anatomy and Physiology at the First Professional Examination was awarded to A. J. Ansari; (13) Dr. M. G. Deshmukh's prize of Rs. 15 in books and instruments for the best student in Chemistry and Botany was awarded to A. K. Duberia.

On Monday, the 29th April, the PRESIDENT, after declaring the results and distributing the prizes, delivered the following address :—"Mr. Principal, Gentlemen, and Students,—This is the third occasion on which I have had the pleasure of acting as President of this Board, and must congratulate the executive officers of the College on the great improvement that has taken place in the practical part of the examination. I need hardly say that there is yet room for further improvement, and it is in the hands of Class B men to show us next year that they can achieve greater and better results than the

students who have gone before them. Theory, of course, is absolutely necessary; but the good practical man, when he gets to a village, takes off his coat, and sets to work in a business-like way, is the class of material we want to form the backbone of the Civil Veterinary Department in India. These men appeal to the owner, he places confidence in them, and this mutual understanding once established, can and does lead to good results. I won't say anything about the impractical man, as we know by experience what he does when let loose in a district. I congratulate those of you who have got your diplomas and are about to commence life in real earnest. The life you have chosen is, I grant, a hard one. It is, however, full of interest and constant change. Difficulties will, no doubt, spring up on all sides at the commencement of your career; but the steady, systematic work will soon overcome these. As you gain experience and confidence in yourself, so will your work become both a pleasure and a profit to you. Those of you who are leaving this institution for good, I wish you all success. My earnest hope is that you will lead sober, industrious lives, become useful and respectable members of society, and be able in the future to give a good account of yourselves."

Veterinary-Captain J. Mills, Principal of the College, thanked the President for kindly taking the trouble in distributing the prizes to the students. He also thanked the members of the Board of Examiners for conducting the examinations in the most able and just way. In his speech he gave sound advice to the new batch of graduates, and wished them success in their future career.

GLASGOW VETERINARY COLLEGE.

The examination of the Royal College of Veterinary Surgeons took place in the Glasgow Veterinary College, Buccleuch Street, on Wednesday, Thursday, and Saturday, the 22nd, 23rd, and 25th May last. The Board of Examiners included Captain Butler, F.R.C.V.S.; Captain R. Moore, F.R.C.V.S.; Mr. H. Somerville, B.Sc. London; Professor J. R. Green, M.A., B.Sc. London; Colonel W. B. Walters, C.B., F.R.C.V.S.; Mr. John M. Munro, D.Sc.; George Fleming, C.B., LL.D., F.R.C.V.S.; Mr. J. W. F. Peacock, M.D., F.R.C.V.S.; Professor J. B. Haycroft, M.B., D.Sc.; Captain Fred Smith, F.R.C.V.S.; Mr. R. Bloyes, F.R.C.V.S.; Mr. Finlay Dun, F.R.C.V.S.; Mr. W. Duguid, F.R.C.V.S.; Mr. G. Sims Woodhead, M.D., F.R.C.P.E.; Mr. Sheridan Delepine, M.B., B.Sc.; Mr. J. B. Wolstenholme, F.R.C.V.S.; Mr. J. Freeman, F.R.C.V.S.; Mr. J. R. Cox, F.R.C.V.S.; Herbert Davies, Swansea, Glamorganshire; Mr. Harry Olver, F.R.C.V.S.; Mr. J. Clerk, F.R.C.V.S.; Mr. J. Malcolm, F.R.C.V.S.; Mr. W. Woods, F.R.C.V.S. There were also present as *ex officio* members:—Principal M'Call, F.R.C.V.S.; Professors W. Limont, M.A., M.B.; J. M'Intosh M'Call, M.B., C.M., M.R.C.V.S.; Thomas King, T. S. Goodwin, F.C.S.; J. Murphy, C. J. Dunn, M.R.C.V.S.; and R. Dobbie, secretary.

The following students passed the A, or first professional examination, viz:—J. Keir, Springburn; R. Spittal, Pollokshields; F. Timeny, Partick (2d. honours); A. K. Murray, Milliken Park; T. Kilpatrick, Belfast; J. M'Leod, Gatton, Queensland; D. Weir, Milngavie; J. Stevenson, Dumbarton; R. G. Jones, Newmarket, Wales (2d. honours); H. Oliver, Birmingham (1st honours); C. W. M'Kay, Greenock (2d. honours); W. W. Lang, Alexandria; J. T. Shannon, Lexington, Kentucky; J. H. Steeds, Dundalk.

The following passed the B, or second professional examination, viz:—H. Ferrier, Bathgate; T. G. Palgrave, London; J. A. Todd, Brighton; F. Russell, Ballynahinsh; J. B. Gates, Glasgow; A. Wooley, Shisken, Arran; G. Broom, Glasgow (2d. honours): R. G. Anderson, Glasgow; J. A. Marshall,

Torrance of Campsie; J. F. M'Eachran, Campbeltown; T. Rennie, Ayr; J. Donaldson, Large; J. R. M'Call, Blairtummock, Baillieston.

The following students passed the first (or theoretical) part of the first examination:—A. Spruell, jun., Paisley; W. M'Murray, Dromore; R. Armstrong, Belfast; W. M'Connell, Londonderry; W. Roy, Glasgow; A. Main, Liverpool; J. Dick, Port-Glenore, County Antrim; R. Griffin, Skerries, County Dublin; A. P. Stewart, Glasgow; R. K. Rutherford, Warwick; L. H. M'Queen, Cardonald, Renfrewshire.

The following gentlemen passed the seeond or practical part of the final examination, and received the diplomas of the Royal College of Veterinary Surgeons:—A. Spruell, jun., Paisley; W. M'Murray, Dromore, County Down; R. Armstrong, Belfast; W. M'Connell, Londonderry; W. Roy, Glasgow; A. Main, Liverpool; J. Dick, Port Glenore, County Antrim; R. Griffin, Skerries, County Dublin; A. P. Stewart, Glasgow; R. K. Rutherford, Warwick.

Medals granted by the Highland and Agricultural Society of Scotland, the late Professor Allen Thomson, of London, and Principal M'Call; and certificates of merit were awarded in the different branches of study as follows:—

Medicine and surgery (horse), written examination—Silver medal, R. Armstrong; first-class certificates, R. Rutherford, A. P. Stewart; second-class certificates, R. Griffin, W. Roy, and A. Spruell.

Medicine and surgery (cattle) written examination—Silver medal, R. Rutherford; first-class certificates, R. Armstrong, M. E. White; second-class certificates, J. Brown, R. Miller, A. Spruell.

Materia medica, written examination—Silver medal, W. Roy; first-class certificates, R. Armstrong, J. Dick, R. Rutherford; second-class certificates, W. M'Murray, R. Griffin.

Pathology—Silver medal, J. Dick; first-class certificates, A. P. Stewart, A. Main; second-class certificates. R. Armstrong, W. Roy, and R. Griffin.

Senior anatomy—Silver medal, R. G. Anderson; first-class certificates, J. M'Eachran, J. Donaldson, and J. Smith; second-class certificates, J. Marshall, F. Palgrave, and D. Walker.

Physiology—Silver medal, R. G. Anderson; first-class certificates, J. Marshall, J. Donaldson, and J. Smyth; second-class certificates, J. Smith and J. Crawford.

Junior anatomy—Silver medal, C. W. M'Kay; first-class certificates, W. Lang, A. K. Murray, J. Shannon, and H. Oliver; second-class certificates, H. Gardner, E. Soutar, and J. M'Leod.

Chemistry—Silver medal, C. W. M'Kay; first-class certificates, C. W. M'Kay, R. G. Jones, and John Stevenson; second-class certificates, John Baird, Troy Kilpatrick, and A. Spittal.

Botany—Silver medal, C. W. M'Kay; first-class certificates, J. M'Leod, H. Oliver, and John Stevenson; second-class certificates, W. W. Lang, R. G. Jones, Frank Timeny, and David S. Weir.

Zoology—Silver medal, C. W. M'Kay; first-class certificates, John Stevenson, R. G. Jones, H. Oliver, and J. Steede; second-class certificates, D. S. Weir, J. Small, and W. Lang.

Practical examination of horses as to age, soundness, operations, &c.—Gold medal (by Principal M'Call), W. M'Murray.

Practical examination of cattle and sheep as to age, soundness, operations, &c.—Gold medal, R. Griffin.

DICK VETERINARY COLLEGE.

Class C.—Messrs. T. Bouchier-Hayes, H. H. Carlisle, D. Cumming, A. G. Elder, H. Featherstonhaugh, W. H. Harvey, P. J. Howard, W. Ison, S. S. Johnstone, A. Marstone, J. J. Neeson, E. C. Norgate, W. H. Pickering,

F. G. Relf, J. D. Richardson, K. Roberts, A. R. Routledge, E. C. Russell, J. Scott, W. D. Wallis, W. S. Worthington.

Class B.—†Messrs. J. Brownless, W. Cathcart, F. Fail, S. S. Foster, R. W. Hadfield, W. W. Hirst, N. Howe, †J. R. Jackson, †H. Lomas, F. McGee, †T. Morland, W. Murgatroyd, *W. Stableforth, J. C. Stevens, J. F. Talbot, H. Tasker, H. O. Thomson, *W. J. Watt, W. Young, J. Younghusband.

Class A.—Messrs. G. W. Bloxome, E. Brown, T. H. Brown, A. C. Burton, D. R. Chalmers, E. Evans, G. Galt, R. Garraway, R. Garrett, †A. Gibson, C. P. Hynes, J. Maguire, P. Mahar, C. F. Parsons, H. Percy, J. W. Pollock, C. A. Reid, N. Roberts, H. Ryan, J. Seton, W. Tart, S. A. Winkup.

Obituary.

Peter Taylor, Manchester, Graduated Member, April, 1844. Fellow, February, 1877.

Edward Marshal Jones, Tetbury, Gloucestershire, graduated April, 1868.

Charles Phillips, Veterinary Lieut.-Colonel, A.V.D., graduated April, 1870.

CONTROLLING TUBERCULOSIS.

BY JOHN SPEIR, NEWTON FARM, NEWTON.

As neither farmers nor the public have as yet realised how infectious tuberculosis seems to be, nor how easily it may be reduced to very small proportions, it may interest many to know what already has been done on an average farm, and under average conditions, in Denmark. The idea of slaughter and compensation has taken such a hold on some of our legislators, and not a few farmers, that they look upon the scheme, submitted by me lately to the Royal Commission on Agriculture, as puerile, while not a few consider that by far too much talk is being made of the losses through tuberculosis, and the risks to human life from it. The report of the Royal Commission on Tuberculosis has settled the latter point. I will now give a few particulars bearing on the former :—

In the spring of 1892, the stock of the farm of Thürebylille, near Copenhagen, consisting of 208 animals, were all subjected to the tuberculin test. As a rule, the most of the cows had been bred on the farm, all the heifer calves being usually kept. I have not the details of the numbers of each ; all I know is that from 130 to 135 cows and bulls were kept, the remainder being young animals. The tuberculin test indicated that 80 per cent. of the cows, and 40 per cent. of the heifers and calves, were infected with the disease. In Denmark, the byre, as a rule, is a very large building, with a hay-loft over ; and as no convenience existed on the farm for housing the healthy stock in a separate byre, it was decided to make a division across the existing one with boards and tar-cloth, and allow as little communication as possible between the two lots. At this date, May, 1892, the total number of healthy animals was seventy, fully one-third of which were cows, the remainder being calves and heifers.

In November, 1892, the healthy part of the stock was again subjected to the tuberculin test, when seven animals out of the seventy which were correct in May, were rejected.

In May, 1893, the number of previously healthy animals on the farm, including calves, was 103, out of which ten failed to stand the test.

In November, 1893, the previously healthy animals had increased by births to 107, from which only one was rejected at this date.

Marked thus * passed with Second Class Honours.
Marked thus † passed with First Class Honours.

In May, 1894, the healthy stock had increased to 122, and of these only two failed to stand the test.

In May, 1895, the healthy portion of the stock consisted of six bulls, sixty-five cows, twenty-eight heifers, thirty-seven calves—a total of 136 animals, every one of which passed safely through the tuberculin test. Two cows and two calves showed slight suspicious symptoms, and two of these are to be killed shortly, in order to see if any traces of the disease remain.

At this date the total stock comprises—

6 bulls healthy.
2 „ unhealthy.
65 cows healthy.
67 „ unhealthy.
28 heifers healthy.
37 calves healthy.

Total, 205 animals, of which 136 animals are sound and 69 unsound.

In three years, therefore, here is an ordinary breeding stock which, without any unusual slaughter or selling of animals, or indeed any special precautions other than the use of the tuberculin test, the separation of the healthy from the unhealthy animals, has had its number of healthy animals raised from 70 to 136, all of which may be now guaranteed as sound, while the infected animals through age will be mostly disposed of within the next year or two. If this stock proceeds during the next two years as we have reason to believe it will, the original infected animals will be all disposed of, and a most unhealthy stock will have been transposed into one free from tuberculosis, all in the short space of five years, and that without specially sacrificing a single animal. With the exception of the separation of the infected and healthy animals, and the boiling of the milk given to the calves, this stock has been purposely kept as it previously was, *the calves being bred and fed from healthy and unhealthy cows and bulls alike.* These results distinctly seem to prove that all that is necessary to fairly control bovine tuberculosis is first, *to rigidly separate the healthy from the unhealthy stock;* second, *to feed the calves on the milk of the healthy cows only;* and third, that unhealthy or reacting cows or bulls should as seldom as possible be bred from. These precautions being observed, it seems quite easily possible to rear a thoroughly healthy stock without resorting to such extreme measures as slaughtering and giving compensation for all infected animals, and thereby upsetting the whole cattle trade of the country.

The history of the calves bred on this farm is a very interesting one, and regarding which I have information up to the present month. As previously said, the calves have been bred from healthy and reacting cows and bulls alike; but, as a rule, all the males and such of the females as were thought not good enough to keep, were killed a day or two after birth. All those which were kept for stock purposes were subjected to the tuberculin test when from six to eight weeks old, *and in only one case has a calf failed under it*, while in the calves killed soon after birth, not a single case of congenital tuberculosis was found.

Post-mortems.

Doubt has occasionally been thrown on the reliability of the tuberculin test for diagnosing this disease, but the *post-mortems* of the animals killed on this farm since 1892, and elsewhere, distinctly show that the indications given were most correct. The carcases of the animals at Thürebylille were all dressed and sold for human food, so that they could not be roughly cut up in the search for evidence of the disease in the flesh or glands, the experimenters in most cases contenting themselves with a thorough examination of the internal organs and a few of the glands.

During 1892 and 1893 there were slaughtered 107 animals, of which 80 were found to be tuberculous, or about exactly the percentage indicated by the test in May, 1892. Out of the 80 tuberculous animals, five had not reacted under the test when last made, showing either that they had contracted the disease since last tested, or, as was supposed in these cases, that the animals had been slightly infected at some previous date, but had been able to throw it off. In these cases the disease was of a very slight degree, and seemed dead, and of an old date.

The remaining 27 animals were all found healthy, as far as the examination went, and with the exception of two, the tuberculin test had indicated that they were free from disease. These two had, however, shown the typical reaction, but no disease could be found in them, although it might exist in some of the glands or elsewhere, which were not available for inspection. Since last summer, five animals have been slaughtered from the reacting portion of the herd, two of which showed developed tuberculosis.

Since 1893, there have been 18 animals slaughtered after fattening from the sound portion of the herd, none of which, when last tested, showed any symptoms of disease, and, with the exception of three, they were all found sound. These three formed part of the original herd before division, and had, of course, been in bad company, and they showed some slight traces of old tuberculosis in a few glands, *but none apparently fresh.*

What the Danish farmers think of it.

During the past three years, the Danish Government have offered to test, free of expense, all young stock belonging to owners who guaranteed that it would be kept rigidly separate from older or reacting animals. Under these conditions 650 farms, carrying 16,676 animals, had the whole stock tested between May, 1892 and 31st December, 1894. The Danish farmers, are, however, so pleased with the results already obtained, that up to date there are applications from other 2,500 farms, which speaks volumes for the success of the test.—*North British Agriculturist.*

CONTAGIOUS DISEASES ANIMALS ACTS, 1894.

Abstract from the Summary of Returns for the week ending May 18th, 1895.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Anthrax.	Glanders (including Farcy).	Rabies.	Foot-and-Mouth Disease.
None	*Slaughtered* Diseased, etc. ... 879 Died ... 160 Suspected 41 1080	Fresh Outbreaks 6 Animals Attacked 22	Fresh Outbreaks 17 Animals Attacked 23	Dogs Killed 16	None

* Wales, 6 cases Swine Fever.

SCOTLAND, week ending May 18th, 1895.

None	*Slaughtered* Diseased, etc. ... 61 Died ... 10 Suspected — 71	Fresh Outbreaks 2 Animals Attacked 2	Fresh Outbreaks 1 Animals Attacked 2	None	None

IRELAND, week ending May 18th, 1895.

Pleuro-Pneumonia.	Swine Fever.	Anthrax.	Glanders (including Farcy).	Rabies.	Foot-and Mouth Disease.
None	*Slaughtered* 111 Diseased, etc. ... 111 Died ... 54 Suspected 18 183	None	None.	Dogs Killed 16 Cattle ,, 4 Sheep ,, 1 Goats ,, 1	None

ENGLAND AND WALES, week ending May 25th, 1895.

None	*Slaughtered* Diseased, etc. ...1033 Died ... 202 Suspected 74 1309	Fresh Outbreaks 4 Animals Attacked 6	Fresh Outbreaks 19 Animals Attacked 31	Dogs Killed 14 ,, Died 1 15	None

* Wales, 45 cases Swine Fever.

SCOTLAND, week ending May 25th, 1895.

None	*Slaughtered* Diseased, etc. ... 13 Suspected 2 15	Fresh Outbreaks 4 Animals Attacked 4	Fresh Outbreaks 1 Animals Attacked 1	None	None

IRELAND, week ending May 25th, 1895.

None	*Slaughtered* Diseased, etc. ... 102 Died ... 51 Suspected 7 160	None	None	Dogs Killed 15 Cattle ,, 1 Ass ,, 1 Dog Died 1 Ass ,, 1 19	None

ENGLAND AND WALES, week ending June 1st, 1895.

None	*Slaughtered* Diseased, etc. ...1116 Died ... 194 Suspected 58 1368	Fresh Outbreaks 9 Animals Attacked 15	Fresh Outbreaks 16 Animals Attacked 21	Dogs Killed 15 ,, Died 2 17	None

* Wales 37 cases Swine Fever.

SCOTLAND, week ending June 1st, 1895.

None	*Slaughtered* Diseased, etc. ... 42 Died ... 2 Suspected 1 45	Fresh Outbreaks 1 Animals Attacked 1	None	None	None

IRELAND, week ending June 1st, 1895.

Pleuro-Pneumonia.	Swine Fever.	Anthrax.	Glanders (including Farcy).	Rabies.	Foot and-Mouth Disease.
None	*Slaughtered* Diseased, etc. ... 90 Died ... 40 Suspected 23 153	None	None	Dogs Killed 23 Cattle ,, 1 Sheep ,, 1 Goat ,, 1 Suspected 4 30	None

ENGLAND AND WALES, week ending June 8th, 1895.

None	*Slaughtered* Diseased, etc. 1511 Died ... 298 Suspected 51 1860	Fresh Outbreaks 5 Animals Attacked 5	Fresh Outbreaks 21 Animals Attacked 25	Dogs Killed 10 ,, Died 2 12	None

* Wales, of Swine Fever, 14 died, 26 slaughtered.

SCOTLAND, week ending June 8th, 1895.

None	*Slaughtered* Diseased, etc. ... 18 Died ... 3 Suspected 1 22	Fresh Outbreaks 2 Animals Attacked 1	None	None	None

IRELAND, week ending June 8th, 1895,

None.	*Slaughtered* Diseased, etc. ... 73 Died ... 63 Suspected 51 187	None	None	Dogs Killed 15 Cattle ,, 3 18	None

ENGLAND AND WALES, week ending June 15th, 1895.

None.	*Slaughtered.* Diseased, etc. ...1618 Died 374 Suspected 43 2035	Fresh Outbreaks 3 Animals Attacked 4	Fresh Outbreaks 17 Animals Attacked 27 Killed ... 33	Dogs Killed 15	None.

* Wales, Swine Fever, 33 killed, 8 died.

SCOTLAND, week ending June 15th, 1895.

None.	*Slaughtered* Diseased, etc. ... 77 Died ... 1 Suspected 0 78	Fresh Outbreaks 1 Animals Attacked 2	None.	Dogs Killed 1	None.

IRELAND, week ending June 15th, 1895.

Pleuro-Pneumonia.	Swine Fever.	Anthrax.	Glanders (including Farcy).	Rabies.	Foot-and-Mouth Disease.
None	*Slaughtered* Diseased 82 Died ... 55 Suspected 42 — 179	None	Killed ... 2	Dogs Killed 17 Cattle ,, 1 Sheep ,, 2 Ass ,, 1 Sheep died 2 *Slaughtered* Pig ... 1 Ass ... 1 — 25	None

Veterinary Department, Privy Council, Dublin Castle.

I regret to notice that the measures adopted by the "Animals" Department of our Board of Agriculture to suppress swine fever are proving ineffectual, also that the dread malady rabies in dogs is not receiving the attention from that Department at the present time so urgently required. As regards swine fever, so little impression is being made upon its progress by the Government staff appointed solely for the purpose of ridding the country from contagious diseases among the lower animals, that opinions of not too flattering a character are being freely expressed among all interested upon a Department that has been reconstructed with such unfortunate results.

Last year, in England, Scotland and Wales, from 1st January to 1st June, 3,415 swine died from fever; for a corresponding period this year 3,683 died. The slaughter of swine diseased and of those exposed to infection has so far this year not been so great as was the case last year, the figures being in 1894, to 1st June, 29,336; in 1895, to 1st June, 18,763, the deaths, on the other hand, being larger in number. The fierce light that has beat upon this Department of late has disclosed a state of matters within it that goes far to account for its want of success, and that renders any further comment superfluous and unnecessary. The Irish Executive has done better work, the Returns in Ireland for corresponding periods being to June 1st, 1894, 12,194 swine slaughtered, and 1,170 died; to June 1st, 1895, 3,411 slaughtered, 838 died. These statistics indicate the likelihood that the disease will shortly be categoried in Ireland with Pleuro-pneumonia and Foot and Mouth Disease, as being non-existent there.

As regards rabies we have every reason to be anxious. There is a serious increase of the disease, both in England and Ireland, Scotland and Wales being at this date free from it. In England, during the past five months, 373 dogs have been "killed or died," while last year, for the same period, there were 80. Ireland returns for the same period this year 328 animals "killed or died," comprising a few cattle, sheep, and swine in addition to dogs, whereas last year there were 200.

I hope shortly to learn that effective measures to extirpate these diseases will be introduced by those gentlemen who are entrusted with administrative powers on the Board of Agriculture. It is evident they are required. I would further suggest that, if at all practicable, no dogs should be permitted to enter this country from the Green Isle until the cessation, or a very marked decrease, of rabies is reported from Dublin Castle.

The suppression of tuberculosis in cattle by scientific methods continues to engage the earnest attention of European Continental Powers and the United

States of America, and if there is any virtue in the aphorism that example is better than precept this country may yet reap some benefit should a spirit of emulation be aroused in those we have to look to for the promotion of our national and individual prosperity in relation to the conservation of our flocks and herds.

I beg to refer the readers of the Journal to the Extract from the Consular Report from the State of Massachusetts, in the pages of this issue, on Tuberculosis. The British Consul therein reports: "The experiment is undertaken without stint in regard to expense, with a judicious mingling of energy on the part of those charged with carrying out the regulations, and regard for the interests of those affected by the provisions of the law." The system of inspection, inoculation, etc., is, moreover, admirable, and it would give great opportunities to our lay inspectors to redeem any reputation they may have had for usefulnes, forfeited by their inability to root out swine fever.

STARTLING STATEMENTS ABOUT MICROBES.

Professor Ray Lankester concluded on Tuesday a series of four lectures at the Royal Institution on "Thirty Years' Progress in Biological Science." He took up the subject of bacteria as the cause of putrefaction and disease. He said that much had lately been said about certain bacteria as the cause of certain diseases. That this was so had been definitely ascertained in certain cases, but many diseases were not properly proved to be caused by bacteria. How do we know that bacteria produced disease? By isolating some of the suspected microbes obtained from man and animals during the cause of the disease, cultivating them separately to get the breeds pure, and then injecting them into healthy bodies. If the disease is thereby produced it is pretty obvious that the microbe is responsible. Now in many instances the process has failed, notably in the case of influenza; but with anthrax, recurrent fever, phthisis, leprosy, glanders, cholera, typhoid, lockjaw, and diphtheria, Professor Ray Lankester holds that the proofs are incontestable. Perhaps the most extraordinary case is lockjaw or tetanus. The bacteria which cause this are found in agricultural soil, a fact which explains the well-known fact that wounds ending in lockjaw have generally been given by agricultural or gardening implements. The microbe enters with the dirt or soil into the wound, and there starts the peculiar form of blood-poisoning which ends in tetanus. It is even believed that the peculiar arrow-poison of the South Sea Islanders consists of tetanus microbes. The natives dip their arrow-heads in the mud which lines the holes of the land crabs, and the microbes from these sources are found to produce all the well-known symptoms of tetanus-poisoning.

The Danger of Drinking Pure Water.

With regard to the cholera and typhoid bacteria in drinking waters, Professor Ray Lankester made some astonishing statements as to recent discovery. Both these microbes, it is believed, can live and flourish for a time in pure distilled water; but if you turn them loose in ordinary drinking water they are promptly attacked by the ordinary harmless bacteria that abound there and are speedily killed—poisoned within a few hours, it is believed, by the toxin given off by the "harmless ones." You can even boil the ordinary water and filter out the common microbes, and yet the typhoid breeds will succumb if afterwards placed in it. Consequently, said the Professor, river water, such as our good old Father Thames supplies, is actually safer to drink, though teeming with microbes, than pure spring or lake water, in which of course, the typhoid germ can flourish unmolested!

Filters and Filters.

The great filter beds by which the large water-companies filtered their water did not act merely as mechanical filters, as was supposed, by reason of the minute spaces between the particles of sand. At such places as the beds at Hampton, the bacteria are allowed to go through the first layers of sand, and on the lower layers become a jelly, which, spreading in the sand, caused the efficiency of the filter to be immensely increased. The water had not only to go through the sand, but through the jelly, and thus could carry no solid particles with it. Not only that, but the poisonous germs of typhoid were very rapidly killed, so that the filter bed of a properly-conducted water company was not merely a filter, but a destroyer of bacteria. It was not so with the domestic filter. In nearly every one he had examined it was a means, not of stopping, but of communicating them to water.

Legal News.

Farmer Failing to Report Anthrax.—In the Haddington Justice of Peace Court recently, before Messrs. W. Ford, A. H. Laidlay, A. M. Main, W. Stephenson, and W. H. Gibson, Robert Auld, farmer, Lochhill, was charged with having in February, 1895, in his possession, or under his charge, a diseased or suspected animal, and did not give notice of the animal being so diseased or suspected to a constable, contrary to the Anthrax Order of 1892, and further, on 30th April, he having had in his possession an ox affected, or suspected to be affected, with anthrax, failed to give information to the police with all practicable speed. Mr. R. Maxwell Main, Procurator-Fiscal, prosecuted, and Mr. Wood, solicitor, appeared for the defender.—At the outset Mr. Wood contended that the complaint should be set aside, because his client was charged with offences in one part and contraventions in another.—Mr. Main briefly replied, and the objections were repelled. A plea of not guilty was then tendered.—*Deputy-Chief-Constable Mann* said he went to Lochhill on 16th May, along with Mr. G. Young, veterinary surgeon. He saw Mr. Auld and told him that he had heard of a man having suffered from touching an animal suffering from anthrax. Mr. Auld said the animal had apparently struck against a feeding-box about three weeks before. The body was partly boiled. Some of it was given to poultry, and his own family took part of it. He declined to answer any more questions, saying witness was trying to trap him. His son John gave a similar story, except that he himself had boiled the carcase. His father told him not to answer any more questions. On Friday, 17th May, witness went and told him that if any more animals died he had better report to the police. Dr. Howden, and Mr. Reid, sanitary inspector, were present and heard what Auld said. After a considerable amount of evasion he admitted to Dr. Howden that about ten weeks before an animal had been gored, and was killed. He denied having anthrax about his place.—Cross-examined by Mr. Wood: Auld was bound to report any case of suspected disease.—*Archibald M Leod*, cattleman, Southfield, Longniddry, and formerly in the employment of Mr. Auld, found an animal dead in a close in the month of February. About eleven o'clock in the day the animal was all right, but between three and four it was dead. He reported the matter to John Auld, who went to meet his father by the train about five o'clock. When Mr. Auld, sen., came home he said witness should have gone for Doughty and got it skinned at once. They proceeded to skin it, and the carcase was boiled up. Mr. Auld gave no reason for this. Grease was taken from it. The animal had never been gored by another, or had its leg broken. On 30th April, cattle were drawn to be trucked at Longniddry. That

day, at half-past seven in the morning, he saw an animal all right, and afterwards he found it lying dead. John Auld told him to cut its throat. The animal was warm. It was skinned, dressed, and hung up. John Auld assisted. Mr. Auld, sen., went to Edinburgh that day. On 1st May two men, one named M'Millan, from Leith came and took the carcase and skin away. About five days afterwards he felt his arm very sore and went to Dr. Howden. He took out the inside of the first beast that had died. He saw the spleen and knew about it. It was larger than in an ordinary animal, soft, and dark. The intestines were dark, and the small ones full of dirty blood. Between the hide and the carcase there was a dirty bloody fluid. The bullock died suddenly without showing any previous symptoms. In the case of the second bullock, after the hide was off he observed a mark like a bruise opposite the kidney. The blood was stickier than usual, but the flesh looked not so bad. The entrails were dark, but that would be accounted for to a certain extent, but not entirely, by the feeding on potatoes. The spleen was soft. The beast was lying on its back, and a blob of fluid was on the top of the kidney. He cut that blob to make the carcase look better. It was natural, in the operation of skinning, that his elbow could come against this. He had not skinned or come into contact with the carcases of any other bullocks.—Cross-examined by Mr. Wood: When the first bullock died he never heard anybody say it was owing to inflammation. He never heard it proposed to send the carcase to Walker, Tranent, to be boiled down. He did not know anything about what was done with the carcase after it was boiled. He never heard Mr. Auld say anything about this being a case of anthrax. Dr. Howden told him that the injury to his arm was due to blood-poisoning, but he did not say that there might not be blood-poisoning by other things than anthrax.—*David Doughty* (who had his right arm in a sling), said he was farm grieve at Lochhill, and deponed to skinning the bullock along with previous witness. He never saw intestines worse inflamed. The carcase was boiled for cart-grease, and the remainder spread on a stubble-field. He assisted to skin and dress the second bullock, and took out the inside which was decidedly better than in the case of the first animal, though it was certainly not what he would like to see. The cattleman told him that he had seen the animal dying and had stuck a knife into it. In the beginning of the next week he felt his arm sore, and a week afterwards consulted Dr. Ronaldson. The first question the doctor put was "Have you been working among skins?" and he was sent to the Infirmary where the same question was put, and a painful operation performed. On the carcase of the second bullock he noticed two dark marks opposite the kidneys. These marks could not be scraped off. In other particulars he corroborated previous witness as to the appearance of the carcase, but he did not notice the spleen.—Cross-examined by Mr. Wood: He had never said that he intended to throw himself and his family on Mr. Auld, and he had not yet raised any action for damages against Mr. Auld. All witness could say of his own perfect knowledge was that Mr. Auld saw the carcase the morning after it died. He could not say he had seen it before. Witness had no experience of anthrax before. He was sowing nitrate of soda in the month of April.—Re-examined by Mr. Main: He thought it was the cattleman who told him that the animal was not quite dead, and he had stuck a knife into its throat. It might, however, be John Auld. At all events, it was between them.—M'Leod was then recalled, and said he had never said so to Doughty. He told John Auld that the animal had died, and Auld told him to cut its throat. The animal was certainly dead at the time.—*Peter M'Cormick*, farm labourer, Lochhill, remembered assisting M'Leod to boil the carcase of a bullock in February, and also remembered about the bullock that died on 30th April.—*Jonathan Spark*, station master, Longniddry, produced

the books, showing that thirteen cattle were sent to Edinburgh by Mr. Auld on 13th April. There was no other date on which that number had been sent.—*David Niven*, butcher, Leith Street, Edinburgh, was at Swan's Auction Mart about three o'clock on 30th April. Mr. Auld told him that one of his cattle had got hurt, and he had left word to have the carcase dressed. He asked what was the best thing to do. Witness told him to send it to the dead meat market. Auld said he was busy, and witness sent M'Millan, butcher's contractor, for it. The bullock was sold for £14 5s. 6d. at the dead meat market. No commission was charged. It was simply sent as a favour to Mr. Auld. The price obtained was reasonable for a bullock of the size and weight. He had cut up the bullock himself and saw nothing wrong with the flesh.—Cross-examined by Mr. Wood: If he had thought there was anything wrong with the meat he would not have risked cutting it up. Inspectors go regularly through the market, and would discover anything wrong.—Re-examined by Mr. Main: He knew nothing about dressing beef so as to make it look better. Of course, some tradesmen killed cleaner than others.—*Wm. R. M'Millan*, butcher's contractor, Leith, deponed to having taken a carcase from Lochhill to Mr. Niven's place, and next day taking the same carcase to market. He knew it was the same carcase, and he saw Mr. Niven cut it up.—John Laidlaw, machineman, accompanied last witness in taking the carcase from Lochhill, and asked if the police could not stop them.—*Constable Donald Munroe*, Aberlady, said he had never got any notice from Mr. Auld about disease in his cattle.—*Professor Owen Williams*, New Veterinary College, Edinburgh, said he had heard the evidence of M'Leod and Doughty, and was of opinion that the disease from which the animals died was almost certainly anthrax. Animals died very suddenly from this disease. When they died putrefaction set in and destroyed the anthrax germs. He would rather handle a body which had been dead for some time than one newly dead. The germs might take some time to develope in the human skin before reaching the blood. He should not like to risk coming in contact with anthrax blood even supposing he had no scratch, but almost every man had scratches which were not visible. A man shaved might not show any scratches on his cheek, but it would not be safe to rub anthrax blood along it. There was a class of men who went in for skilful dressing by which the flesh of an animal that had died of anthrax would appear all right, except when microscopically examined. The system of inspection in Edinburgh market was not thorough. Cross-examined by Mr. Wood: He could not say when the anthrax germ came in. It was probably as old as Adam. Asked if he could explain how none except M'Leod and Doughty suffered from the anthrax, witness said there had been an outbreak of smallpox in Edinburgh recently, and he had not taken it. *George Young*, V.S., Haddington, accompanied Deputy Chief-Constable Mann to Lochhill on 16th May. Mr. Auld said one of his cattle had come in contact with a feeding box about three weeks before, and it had to be killed. That, he said, was the only death he had. He corroborated Mr. Mann's evidence and said the symptoms deponed to by previous witnesses pointed to anthrax. Cross-examined by Mr. Wood: Anthrax was pretty well known now, and if an animal died suddenly without any apparent reason the owner should be very suspicious. Dr. Robert Howden, Haddingon, said M'Leod came to him with a bad arm. He made a diagnosis, and found that it was a case of anthrax. Witness asked him what he had been about that he had got this, when the man said he had been killing a bullock four or five days before. Witness did not know any other way in which this disease could be got except by contact, and possibly by inhalation. About 17th May he went to Lochhill, accompanied by Superintendent Mann and other officials. He interrogated Mr. Auld, asking what had been done with the carcase of a bullock that had died on his premises a fortnight before. Mr. Wood objected to this part of the evidence, which, he

held, was composed of statements made weeks after the alleged offence had taken place.—Mr. Main held that the evidence was quite competent.—Witness said he had got the information in Superintendent Mann's presence, but he (witness) did all the questioning.—Mr. Wood's objection was overruled.—*Dr. R. Howden* then made a statement in his own words, and without questions being put. He said he questioned Mr. Auld, giving him to understand that he had come there in the interests of public health to find what had been done with the carcase of a bullock that had died. Mr. Auld stared incredulously and attempted to deny all knowledge of any animal having died there, and attempted to confuse witness. He then admitted one having died ten weeks previously, and to its carcase having been boiled down. With regard to the other he said his son knew better.—*Dr. Wallace James*, Haddington, saw M'Leod on 24th May. From the appearance of the wound and the symptoms as stated, he believed he was suffering from anthrax. He had experience of anthrax in animals, and the symptoms stated by previous witnesses denoted its appearance.—Cross-examined by Mr. Wood: A person must have a wound before being struck with anthrax. *Dr. Ronaldson*, Haddington, said Doughty came to consult him on 13th May. He was suffering from anthrax, and his life was in imminent danger. Inspectors in the Edinburgh market could not, without microscopic examination, be sure in all cases of the existence of anthrax. It was quite possible that some people might escape anthrax and others be affected, on the same principle as some had escape the prevailing malady of influenza.—*Dr. Bond*, resident surgeon, Edinburgh Royal Infirmary, deposed to Doughty coming to the Infirmary suffering from anthrax. He was in great danger and might have died had an operation not been performed. The flesh of animals which had died from anthrax was dangerous if put into the public market.—This concluded the case for the pursuer.—For the defence John Auld, son of the accused, said he thought the first animal died from inflammation, and as it could not be bled the carcase was boiled down. On 30th April the cattleman told him about an animal having died, and witness told him to cut its throat. That was done, and he assisted in skinning and dressing the carcase. He saw nothing wrong with the flesh. The cause of death he attributed to its having received a blow, as he observed a mark near the heart. He had no suspicion whatever of anything like anthrax.—Cross-examined by Mr. Main: He did not know whether both animals had died suddenly, but they were dead when got.—*Robert Smith*, manager, Central Meat Market, Edinburgh, did not remember seeing a carcase sent by Mr. Niven to him on 2nd May, but he knew he sold one for him on that date at full market value, and it passed through the inspectors in the usual way.—Cross-examined by Mr. Main: He had seen meat condemned as affected by anthrax, and he did not think it was possible to hide it.—*Robert Auld*, the accused, said he was over 77 years of age, and had been farming all his days. When the first bullock died he told M'Leod that he usually sent these to Walker, Tranent, but he agreed to allow the carcase to be cut up and the grease taken out of it. He never saw a case of anthrax and had no suspicion. On 30th April when he was going in to Edinburgh to see some cattle sold he was told that one of the cattle was either dead or dying. He told them to cut its throat, and when he came home at night he saw the carcase hung up and the flesh looking all right. He sent it in to Edinburgh and got full value for it. When Mr. Mann came along he spoke of the first one that died, and never thought of the second one at all. When he saw Dr. Howden he never dreamed of the second one at all.—Cross-examined by Mr. Main: He told Mr. Niven in Edinburgh that he had a bullock that would be killed before he went home. He did not think, he said, it had choked on a potato. When the Inspector and Mr. Young came down he did not think it necessary to say anything about the last one that died.

When the doctor and the others were putting question after question over and over again he thought there was no use for it, and did not answer. When the bullocks died he did not think it necessary to call in a veterinary surgeon to say of what they had died. Perhaps they could not tell.—Mr. Main having pressed for the full penalty of £20 in both cases, and Mr. Wood having replied, their honours retired for twenty-five minutes.—The finding of the Court was £5, or seven days on the first count, and £20, or fourteen days on the second.

Army Veterinary Department.

Queen's Birthday.

Colonel J. D. Lambert, C.B., Director-General, Army Veterinary Department, was one of the guests at the dinner given by the Secretary of State for War in honour of Her Majesty's Birthday anniversary.

Extracts from London Gazette.

Extracts from *London Gazette* of 28th May, 1895, and 11th June, 1895:—

Veterinary-Lieutenant R. J. D. Tibalor resigns his commission. Dated 29th May, 1895.

W. B. Edwards, gent., to be veterinary-lieutenant, *vice* R. J. D. Tibalor, resigned. Dated 12th June, 1895.

The following appears in the despatches of the Waziristan Expedition, published in the *London Gazette* of the 14th instant:—"Veterinary-Major G. J. R. Rayment, Army Veterinary Department, is an officer devoted to his profession, who has done admirable work in the treatment of sick and wounded animals, and also by his sound advice in all matters connected with his department."

Death.

We regret to announce the death of Veterinary-Lieutenant-Colonel C. Phillips, which occurred in Dublin on the 14th instant. This officer was born on 26th January, 1851, received the diploma of the Royal College of Veterinary Surgeons on 19th April, 1870, and the degree of Fellowship, by examination, on 26th May, 1890. He joined the Army on 27th August, 1870, proceeded to India in December of that year, and remained in that country till January, 1878. On 4th June, 1879, he went to South Africa in veterinary charge of remounts, and served in the Zulu Campaign; was mentioned in despatches, and was granted a medal and clasp. On the 10th September, 1884, he proceeded to Egypt for duty with the Soudan Expedition, Nile Force; was mentioned in despatches and granted a medal with clasp and bronze star, and was promoted to the rank of veterinary-major for meritorious service. On the 24th February, 1894, he was promoted to the rank of veterinary-lieutenant-colonel and posted to Ireland as district veterinary officer for that country, where he served until his lamentable death.

The annual dinner of the Army Veterinary Department was held at the Hôtel Metropole on the 21st inst., when the following officers were present:—Veterinary-Colonel J. D. Lambert, C.B., Director-General; Veterinary-Lieutenant-Colonels J. H. B. Hallin. C.J.E.; G. A. Oliphant, W. B. Walters, C.B.; W. A. Russell; H. Thompson; Veterinary-Majors J. Kettle, J. Reilly, B. L. Glover, J. C. Dwyer, R. Rowe, G. D. Whitfield, J. K. Grainger; J. Burton, S. Longhurst; Veterinary-Captains T. Flintoff, R. H. Rinze, R. Pringle, T. A. Kellick, J. B. Savage, K. Lees, E. H. Kelly, L. J. Blenkinsop, F. Joslen, E. R. C. Butler, G. C. D. Fowler, D. J. Berry, E. J. Lawson; Veterinary-Lieutenant F. C. Stratton, E. J. P. Barry, W. E. Russell, F. M. Carr, and F. W. Hunt. Veterinary-Surgeons 1st Class, H. Dawson and A. A. Jones.

Extracts from Foreign Journals.

INFECTIOUS ABORTION.

THE distinguished Danish surgeon Sand read a paper recently before a meeting of veterinarians on this interesting subject, in the course of which he gave the result of observations made by forty-five veterinary surgeons. The first question on which opinions were asked was whether infectious abortion is of frequent occurence, and to this question 23 Danish surgeons replied that it was very common, 11 that it was pretty common, whilst from other parts of the country it was reported that abortion had assumed the dimensions of a veritable plague. Attention has long been directed in Denmark to the question of the origin of this pest, and the reports of the 45 surgeons show that it can be introduced into healthy herds by the purchase of cows from infected places. Attention is drawn to the fact that in purely cattle-breeding establishments abortion is scarcely known. A case is reported in which a recently purchased cow apparently introduced abortion into a stable where the plague had been till then unknown, but where it at once spread; the owner concealed his misfortune, and sent his cows to be served by the bull of one of his neighbours, whereupon abortion was introduced into the neighbour's stable, and persisted for two years. Another surgeon reported as follows: "In a certain herd abortion reached an acute stage. After the calving of a certain cow, I took a portion of the after-birth home with me, and as I had a little Jutland cow, which always carried its calf fourteen days too long, and was due to calve in four weeks, I rubbed the vagina with the piece of the after-birth; in five days my cow aborted. From this cow again another piece of after-birth was taken, and applied in the same way to another cow of little value which used to carry her calf too long, and which was destined for the butcher; she aborted in seventeen days." On the important question whether bulls can act as spreaders of infection, little is to be learnt from veterinary literature, but seven of these Danish surgeons have brought convincing proofs of inoculability by means of the bull. In one case a bull was brought to a village to serve the cows of four adjoining farms, and all the cows served by this bull aborted, as well as those from a distant farm that were brought to be served by him. In another case a bull was purchased for an estate; he was of healthy stock, but had been stabled for a day or two at a farm where abortion was the general custom among the cows; at the same time it was stated that he had not come into contact with the cows of this farm. This bull was set to serve the older cows, whilst the younger cows on the estate were to be served by a younger bull; of the older cows some 12 or 14 aborted; of the younger animals, served by the younger bull, not one! It was afterwards discovered that the older bull, before his introduction to the estate, had covered two cows from an infected herd. In this case abortion continued for two years.

With regard to the observation of pathological alterations in the genital organs, mention is occasionally made in veterinary literature of eruptions in the vagina or on the labia. From the reports of these Danish surgeons it appears that such phenomena are at any rate rare; either nothing is said about them or their existence is expressly denied. Only one surgeon mentions having treated a bull for inflammation of the prepuce, which had evidently been brought about by covering infected cows, and on the other hand he observed inflammation of the vagina take place in cows after they had been served by a bull which had previously served infected cows. One surgeon frequeutly noticed, long after abortion, peculiar nodules develop, underneath the knee-joints, outside the hip-joints, at the hocks, and at the elbow-joints and elsewhere, and those nodules contained a thin slimy liquid. Whether these had any connection with the abortion is as difficult to

determine as is the significance of the peculiar swelling of the back of the knee-joint.

The period of abortion falls usually between the fifth and the seventh month. In the earlier stages of infection and until the malady has, so to speak, reached its crisis it occurs even sooner, sometimes in the third or fourth month, and gradually declines till the normal time is again reached. This is to be explained only by the decline in the virulence of the bacteria and the increasing power of resistance on the part of the organism until complete immunity is obtained. An old experience of surgeons is likewise confirmed by these reports of the 45, namely, that late-bearing cows when purchased and introduced to an infected herd do not at first abort, but do so without exception in the second year. According to observation, heifers are the most disposed to abort and abort earliest, doubtless because pregnancy makes greater demands on them than on older animals.

Of great importance is the question whether the same cows abort year after year, and this question has received very little attention; in veterinary literature it has hardly been treated on at all. It would be in itself a possibility that infectious abortion should bequeath immunity, and this theory receives actual confirmation in as far as 28 of the 45 surgeons report that, as a rule, cows abort only two to three years consecutively. It is true one cow was observed which aborted five years consecutively; but the majority of the reporting surgeons say that the aborting lasted, as a rule, only two to three years, and if it was continued, it was continued only by the heifers and purchased cows. It thus appears that the best way to get rid of the plague of abortion is to *keep* the animals affected by it and to avoid the purchase of fresh animals. In this connection one of the 45 surgeons reports as follows: "In a herd of 60 cows in one particular year the great majority of the cows aborted; the owner sold the aborters and bought others, but in the following year *all* the new cows, and a portion of those that had been spared the first year, aborted. Once more the aborting cows were sold and replaced by others, which next year again aborted. This went on for eight years, till the owner saw that purchasing fresh stock was useless; he therefore kept the old stock, and in two years the abortion ceased." Another surgeon reports a similar case, in which by new purchases abortion was kept up for twelve years. The verification of this theory is of the utmost importance for the practical question of eradicating abortion, and the attention of all veterinarians ought to be directed to the above-mentioned facts. With regard to the economic aspect of the question, it may be said that infectious abortion is universally regarded as the worst misfortune that can befall the owner of cattle, and is almost on a par with tuberculosis. The loss consists, as is well known, in the diminution of the milk-supply and in the difficulty of maintaining the herd in existence, as well as in other annoyances. The diminution in the quantity of milk is proportionate to the earliness of abortion—the earlier this occurs the less milk is there, and the diminution is increased by the persistent retention of the after-birth. The majority of the observers speak of a reduction in the milk-supply as amounting to one-half, but it is often greater. The serious reduction in the number of calves born alive, the great mortality amongst these after their birth, and the frequency of sterility amongst the mothers as a consequence of abortion, are amongst the troubles that beset the life of the cattle-owner. One surgeon noticed that in a particular herd 50 to 60 per cent. of the cows became sterile after abortion.

The opinions of the Danish surgeons as to the best mode of treating abortion vary considerably. Sand himself declares it to be difficult to give a pronouncement on the matter, all the more because abortion generally diminishes of its own accord after two to three years, and finally dies away.

The efficacy, therefore, of curative measures will depend, for the most part, on the time at which they were applied. If, for example, the abortion has already reached its crisis when remedies are applied, the apparent efficacy of these will be naturally greater. It is wonderful to notice what an importance is still attached, even in these modern days, to superstitious remedies. In some parts of the country farmers are to be found who think that this plague can best be stopped by bringing a living goat or a dead fox into the cattle-sheds. Of scientific remedies, the most commonly applied is the subcutaneous injection of carbolic acid, as recommended by Bräuer, and the great majority of surgeons have had good results from its use. It must be remembered, however, that Bräuer recommends, along with the injections, the most careful disinfection of the external generative organs of infected animals and the thorough cleansing of the stables, and the good results may be as much owing to these measures as to anything else.

The results of the Danish surgeon's observations may be summed up as follows :—(1.) Of the infectious nature of abortion there can be no doubt ; it can be conveyed from herd to herd by infected animals both male and female. (2.) It does not leave behind it immediate immunity ; two to three years must elapse before this occurs, but immunity will not be obtained and abortion will not cease unless the infected animals are kept together and no additions be made to the stock by purchase ; to act otherwise will only result in spreading the plague and lengthening its duration. In the course of the two or three years abortion gradually diminishes until the normal time of pregnancy is once more reached. (3.) The best mode of treatment is the careful disinfection of all walls and sheds with chloride of lime twice a year, a weekly washing down of walls and pillars, &c., and a daily cleansing of drains and gutters. (4.) Immediate separation of all animals about to abort is necessary and careful watching of same by special attendants ; likewise removal of the after-birth twelve hours after the fœtus has been passed, destruction of this and of the fœtus by burying them in quick-lime. (5.) Washing out of the uterus after abortion with a solution of 1 per cent. of creolin or $\frac{1}{2}$ per cent. of lysol is advised until the stoppage of the vaginal flow takes place. Cows that have been so affected must not be allowed to go the bull till two or three months have elapsed since the birth. By this means not only is the spread of infectiou stopped, but the animals generally become pregnant again. (6.) In the case of the apparently healthy cows and heifers it is recommended that the vagina be syringed (either as above or with a solution of 1 per cent. of fluid carbolic acid plus 1 to 2 per cent. Natr. Carbon.) before they are allowed to go to the bull ; afterwards the external genitals should be washed daily. The penis of the bull should be syringed in the same manner.—(*Berliner Thierärztliche Wochenschrift.*)

EXPERIMENTS WITH MALLEIN AT BUDAPEST (HUNGARY).

In the stables of a large posting establishment at Budapest, where 340 horses are kept, glanders broke out some time ago, and several circumstances pointed to the probability of its having existed for some time in a latent form. In consequence of this the Mallein test was applied to all the horses and more than 100 reacted typically ; these were at once slaughtered and afterwards dissected by Dr. von Raetz, Professor of Pathological Anatomy in the Veterinary College at Budapest. The dissections had to be conducted in a somewhat hasty manner, as the number of animals to be slaughtered was so great ; consequently only the rougher changes caused by glanders could be looked for. Yet these changes were found in over 90 per cent. of the horses slaughtered, although these whilst in life had shown no perceptible glanders-changes, but had reacted typically. It is probable that in the remainder more or less trifling changes were present, but remained unnoticed for the

reason stated. In Budapest, therefore, as in Paris, Mallein has proved in a marvellous manner its capacity for picking out diseased animals from a herd that has been long secretly infected, and thus enabling stock owners to avoid great and unnecessary losses by a vigorous slaughter of the diseased individuals. The Hungarian Government is now convinced of the efficacy of Mallein, and intends to utilise it on a much larger scale in future. In the meantime, seeing that Mallein has succeeded in discovering the widespread infection amongst the post-horses, orders have been issued for the examination of all horses in Budapest and for the application of the Mallein-test in all stables where there is the mere suspicion of glanders.—(*Berliner Thierärztliche Wochenschrift*).

Notes and News from Foreign Journals.

A Prolific Cow.—The following case is reported from the neighbourhood of Hünfeld (Nassau). A cow produced in 1892 three calves, in 1893 the same number, in 1894 twins, and on the 9th of May this year four living calves, all of normal development and all quite lively!

Arsenic Poisoning.—Veterinary Surgeon Schultz of Idstein, says he has been in the habit of prescribing for horses troubled with worms the following, in the form of pills:—Ac. arsen. 1 gramme, Hydrarg. chlor. 4 grm. along with Radix althea (1 grm. = 15·43 grains). In one case he gave even 4 gr. ac. arsen. for three days in succession without any bad results. He was therefore unpleasantly surprised one day when he was called in to examine a miller's horse, to which had been administered only 2 grammes of arsenic but which was showing distinct symptoms of acute arsenical poisoning. The mill was remote from other habitations and nothing could be got for the horse but sugar and water, which was administered in large quantities, and in 24 hours the animal had recovered. Great caution should be observed when dealing with drugs like arsenic.—(*Berliner Thierärzt. Wochensch.*)

Another Case of Poisoning.—A strong eight-year-old mare suffered from worms. Veterinary Surgeon Kramer administered 12 grammes (= 3 drms.) of Tartar Emetic and this seemed to effect a cure, but after a time the worms re-appeared. Kramer now ordered two powders each of 12 grms. Tartarus, and 4 grms. Calomel, the second powder to be given to the mare ten days after the first. By mistake the second powder was given the day after the administration of the first. Half-an-hour afterwards profuse perspiration broke out in the mare, accompanied with continuous groaning, sickness, fever, and a quickened breath and pulse. Hay and water were greedily taken by her, and red wine was administered to her day and night; she was also rubbed with spirit. On the sixth day she could stand on her feet again, and gradually she recovered the full use of her limbs, but it was a long time before she was thoroughly well again.—(*ibid.*)

Excision of the Clitoris in a Mare.—A case is reported of a mare which used to become in the summer months so vicious, that any attempt to approach her was attended with danger. She became so bad that her owner forbade his servants to use her, on the supposition that it was a case of degeneration of the ovaries. When left to herself, the mare kept continually lashing her flanks with her tail. A surgeon was called in but would not hear of ovariotomy, which the owner wished him to perform; instead, he recommended excision of the clitoris. The mare was cast and narcotised, and the clitoris was removed with the aid of a thermocauter. Two days afterwards the mare allowed anybody to approach her; the wound could therefore be treated without any difficulty. A few days later she was ready for work and could be employed in any kind of service—(*Ibid.*)

Notes and News.

THE Cruelty to Animals (Scotland) Act, 1850. An amended Act has lately been passed, in extension of the above Act to the following effect. The definition of the word "Animal" in section 11 of the recited Act shall be amended by adding at the end thereof the words "or any game or fighting cock, or other domestic fowl or bird," and every person who shall in any manner encourage, aid or assist at any cock fight, whether in a place kept for that purpose or otherwise, shall be guilty of an offence under the said Act.

THE PROPHYLACTIC PROPERTIES OF ANTI-TETANIC SERUM.—M. Vaillard has rendered useful service in reminding the profession of the marked prophylactic properties of anti-tetanic serum employed hypodermically. The serum is now acknowledged to be powerless to counteract the virus once the disease is declared in an acute form. When, however, the evolution of the tetanus is slow, the injections, associated with removal of the tissues primarily inoculated, increase the chances of recovery. But it is as a prophylactic agent that the value of the serum is conspicuous. Injected into animals it renders them quite immune against the toxine. This immunity is only temporary, lasting from two to six weeks, according to the dose employed. But successive injections may be had recourse to without inconvenience. Certain and complete immunity is further conferred on animals into whose areolar tissue the virus has been introduced, but a like happy result cannot be predicted with certainty when the poison has been introduced into the thickness of a muscle. This is explicable enough when one considers that it is to phagocytosis that we must look for the successful destruction of the virus, and that this process is always rudimentary in the muscle, whereas in the subcutaneous tissue it is most active. The injection of the serum as a preservative is, therefore, called for in individuals who have met with traumatisms which, from their situation, their nature, and the circumstances attending their infliction, are known commonly to lead to tetanus (contused wounds contaminated with soil, dust, dung, or river mud; wounds complicated with entrance of foreign bodies that have been in contact with the soil). The employment of the serum is again indicated in animals that have undergone operation known to favour the *éclosion* of tetanus (castration, tail-amputation, and operations on the hoof). M. Vaillard tells us that the preventive use of the serum is destined to render immense services to the inhabitants of tropical countries, where tetanus is so apt to supervene on trivial injuries as to constitute one of the principal causes of death amongst the natives. The serum will be specially applicable in certain northern countries of Europe where tetanus of the new-born is responsible for as much as 60 per cent. of infant mortality. Again, what a prospect of salvation does the employment of the method hold out in military surgery in time of war. In veterinary practice thousands of valuable lives may thus be saved. Already Professor Nocard has inaugurated this preventive treatment, and the injections have been in the hands of several veterinary surgeons the means of arresting the disease after such operations as castrations and such injuries as penetration of a nail into the hoof. Who would, twenty years ago, have prophesied that tetanus would be converted into what it actually is —a preventable disease?

EXTRACT FROM THE ANNUAL AGRICULTURAL REPORT OF THE BRITISH CONSUL, BOSTON, UNITED STATES, REGARDING TUBERCULOSIS.

A VERY determined effort is being made in Massachusetts to stamp out tuberculosis among cattle. The subject is one of very great interest, not only

to this State and country, but to the world in general, as Massachusetts has always been in the van of progress in matters of this sort, and may be relied upon to carry out the experiment it has undertaken without stint in regard to expense, and with a judicious mingling of energy on the part of those charged with carrying out the regulations, and regard for the interests of those affected by the provisions of the law. The Act under which the experiment is being made, only came into force on the 20th June last, and the first report of the Board of Cattle Commissioners, acting under it, has just come out, and I have forwarded copies of it to the Foreign Office, where, no doubt, it will be made available to the public or to those interested in the subject.*

I think, however, that a short notice of it will not be out of place in the present report.

Previous to the passing of the above-mentioned Act, although cattle inspectors existed throughout the State, their duties were somewhat vague, and more of a permissive than an obligatory nature. From the passing of the Act, however, the law compels all cities and townships to provide inspectors, and these are put under the control of the Board of Cattle Commissioners, whose number is increased from three to five members, and who have considerable powers, and very arduous if interesting duties. The inspectors are 394 in number, and are under the control of the Board, though appointed and paid by the cities or townships. Their duties are to inspect all animals, and quarantine those that appear to them affected with any contagious disease. They have also other duties connected with the inspection of all butchered cattle, but these need not here be specified. They have no authority to remove a quarantine once imposed, that power being reserved to the Cattle Commission. Prior to October 4th, the existence of contagious disease in animals was determined by the Commissioners by physical examination, but since that date, the Commission has adopted the uniform rule of subjecting all animals suspected of being affected with tuberculosis, to the tuberculin test. This test is not applied by the inspectors, but by the Commissioners themselves, or their own direct agents and assistants, of whom, up to December 15th, 33 had been appointed.

The test is applied as follows:—A sufficient number of preliminary examinations are made with the clinical thermometer, to ascertain accurately the normal temperature; these examinations being made at, as nearly as possible, the same time of day in all cases. The normal temperature having been ascertained and recorded, the injection of tuberculin is made in the evening. Eleven hours after the injection, the trial temperatures are taken and recorded. These are taken every two hours until the test is finished. The time required to properly complete this part of the test varies considerably; it may be roughly stated at from six to 30 hours, with an average of about 12 hours. The Commissioners, in their report, state that the reaction caused by the tuberculin is so plainly marked in most cases, under the usual conditions, that the animal may be condemned or released with absolute certainty, provided that the necessary care has been observed in making up the tables of temperatures. The animals which pass the examination are branded as sound. Those condemned are, in all cases, dissected and further examined, as, under the Act of 1894, the owner receives full value as compensation should dissection not confirm the diagnosis arrived at by the tuberculin test; whereas, if correct, he receives "one half the value thereof at the time of slaughter for food or milk purposes, and without taking into consideration the existence of disease."

Provided always, however, that the animal has been within the State continuously six months prior to its being killed.

* Forwarded to Board of Agriculture, May 3rd.

This question of compensation gave rise to very great discussion when the Act passed, and has been still more hotly debated since. Previous to June 20th, 1894, no compensation whatever was paid for an animal slaughtered in consequence of having been found to be affected with any contagious disease; now, on the contrary, the views of the legislature have so far altered that, not content with the compensation allowed by the Act of 1894, a fresh Bill has been brought in, and at the time of writing this report has passed through almost all its stages, which contemplates paying no longer the half, but the entire value of animals slaughtered under this Act. Under the old law of 1893, the Commission slaughtered, as tuberculous, 529 animals, for which no compensation at all was paid. Since the passing of the Act to the end of 1894, the new Board of Commissioners have sanctioned payment for 810 cattle, condemned and destroyed as tuberculous, in a total sum of 15,280 dol. 15 c. (about £3,050), or, on an average, at the rate of £3 15*s.* 2*d.* each; that being half the estimated value of the animals at the time they were killed, "for beef or milk purposes."

It may here be interesting to note the practice in regard to compensation in the other States comprised in this consular district.

Maine relies upon the owners reporting cases of tuberculosis, and does not make any systematic inspection of the animals in the State, but under an Act passed in 1893 the Cattle Commissioners are authorised to destroy animals found affected by infectious or contagious diseases, and to pay the owners "one half of their value as determined upon the basis of health before infection." With a proviso, however, that no compensation is allowed if the beast has been exposed to infection ontside the State, or has been brought into the State within three years previous to its showing evidence of such disease.

The law in New Hampshire is the same except that instead of three years the limit of time is three months.

In Vermont a new law was passed as lately as November 27th, 1894, which fixes the compensation to be paid, as in the other two States, at one half the value "on a health basis," and the limit of previous residence at six months, but has this curious limitation with regard to using a tuberculin test, namely, that it may not be used without the owner's consent in the case of any animal owned and resident in the State, but it may freely be used on cattle imported from outside the State if quarantined on suspicion of disease.

Returning to the powers and duties of the Cattle Commissioners in Massachusetts: the system established by the Board meeting, held on October 4th last, embraced the following points:—

1. The test, with tuberculin, of all suspected cases reported by the local inspectors.
2. The regulation of the importation of all meat stock into the State.
3. The quarantine of all imported animals unless tested with tuberculin, and either condemned or certified as sound.
4. The establishment of regular quarantine stations.
5. The forbidding of all importations of neat stock, unless delivered at these stations.
6. The branding of all animals that pass the tuberculin test.
7. A systematic examination, by the use of tuberculin, of all animals within the State—beginning with the three southernmost counties.

These resolutions only came into full effect on November 25th last, and the amount of work got through with since is little short of marvellous.

I may mention that the inoculation is entrusted exclusively to veterinary surgeons; the inspectors, as above stated, having nothing, as such, to do with the tuberculin test.

The tuberculin used is exclusively prepared at the United States Laboratory at Washington.

These few notes may serve to show the scope of the work being done by the Massachusetts Board of Cattle Commissioners, but I strongly recommend those interested in the matter to refer to the report itself, of which, as I have said, I have sent some copies to the Foreign Office, and could obtain more if required through the courtesy of the Chairman of the Commission.

Correspondence.

C. on M., Manchester,
May 12th, 1895.

To the Editor of the Veterinary Journal.

Dear Sir,—Would you oblige by inserting enclosed? I could send you all Professor G. T. Brown's letters and mine, but they would occupy too much space. I warned him that it was probable that I should make use of them publicly.—Yours truly,

W. G. R. A. Cox.

VETERINARY INSPECTORSHIPS AND THE BOARD OF AGRICULTURE.

Sir,—We hear a good deal about our social and professional improvement, and not the least prominent amongst those who profess an anxiety for its continnance and rapid progress are the teachers at our schools. In one of them an individual, who owes more to the profession than the profession does to him, we have had an apt illustration of the real feelings that actuate many of these toward the body corporate. It is scarce necessary to say that subordinate to the Board of Agriculture is a Veterinary Department, having its staff of inspectors who are appointed to supervise and control, or suppress contagious disease. The chief of the Veterinary Department was, until some time ago, Professor G. T. Brown, and there can be no doubt that he was the main, if not the only, factor in the appointment of inspector. He is anxious for our social elevation and he shows it by giving an important position—Head of the Diseases of Animals' Department—to a military officer, and by the appointment of about 30 subaltern inspectors who are not vets., and know nothing of disease. It is useless to attempt to wriggle out of this as it is on record.

It might puzzle some of us to solve the motives for such action. We can only surmise that the idea of thoroughly experienced *practical* inspectors is obnoxious to the powers that be, lest they should distinguish their lack of diagnostic acumen that it may be safely said has been painfully illustrated in the past. To what shame and reproach have they exposed us by soliciting, like beggars at a gate, an endorsement of their statements by continental *confrères*, who, although their friends, would not commit themselves. Take a more recent instance where unable to decide. A portion, said to be pleuro-pneumonia lung, was submitted to a microscopic expert not at all experienced in the morbid anatomy of that malady. A practical expert could diagnose a case better without the microscope than they can with it.

Quite recently anthrax has appeared in Leicestershire, and replying to the County Council this sapient Department, say they "have no veterinary officer that they can send down," and this we can quite believe, when in a letter written to me, Professor G. T. Brown says, treating of travelling inspectors, "they have no veterinary duties to perform." What upon earth are they for, and why the expense when the burials, disinfection, and other minor matters are done by the police? The nature of the malady being affirmed by the

local veterinary surgeon, perhaps the learned gentleman will give us an idea of what is his notion as to the courtesy due from him to us.—I am, yours obediently,

W. G. R. A. Cox.

House of Commons,
May 23rd, 1895.

To the Editor of the Veterinary Journal.

Dear Sir,—As the question of the organisation of the late Veterinary Department of the Board of Agriculture, now called the Animals' Division, is one in which I take a special interest both from a public and professional point of view, I should be much obliged if you would, with a view to strengthening my arguments, write to me your opinion thereon. It appears to me that the veterinary profession have good cause of complaint of the action of the Board of Agriculture in abolishing the post of director and thus depriving them of a position to which they were fully entitled by reason of the valuable services which they have rendered in the past to the State, and it is my intention on the estimates to raise the whole question in committee.—Yours faithfully,

Hudson J. Kearley.

House of Commons.
May 30th, 1895.

Mr. Kearley presents his compliments to the Editor of the Veterinary Journal, and thinks it may be of interest to the profession to know that he has given notice of a reduction, in supply, of the vote for the Board of Agriculture, in order to enable him to call attention to the change of policy in the Veterinary Department in failing to appoint a veterinarian to the vacant post of director, reducing the number of the scientific officers in the Department, and in renaming it the Animals' Division.

New Veterinary College, Edinburgh,
16th June, 1895.

To the Editor of the Veterinary Journal.

Sir,—Permit me through your valuable Journal to thank the members of the profession who supported me at the recent election of members of Council.

I consider it a very great honour to have been re-elected, as it seems to point out that after a year's trial a large number of the profession have so much confidence in me.

It will always be my endeavour to promote and protect the interests of the profession.—I remain, Sir, your obedient servant,

W. Owen Williams.

Communications, Books, Journals, etc., Received.

Messrs. J. and A. Churchill; Dr. Bruno Galli, Valerio, Milan; J. Washington Irving, M.R.C.V.S., Brisbane; Joshua A. Nunn, F.R.C.V.S., C.T.E.; Prof. T R. Fraser, M.D., F.R.S.; E. Wallis Hoare, F.R.C.V.S., Cork; Veterinary Department, Privy Council, Dublin Castle; W. Owen Williams; J. P. Duncan, Esq., M.D.; E. W. Anderton, Esq,; R. Elliott, Esq.; "Hirudo"; M. J. Cleary, Esq.; Glasgow Veterinary College; H. J. Bowes, M.R.C.V.S.; "The Veterinarian"; "The Veterinary Record"; "The North British Agriculturist"; "The Board of Agriculture," London; Army Veterinary Department; A. W. Hill, Esq.; "American Veterinary Review"; Dr. A. J. Haslam; "The Cape Agricultural Journal"; "The Times of India;" Recueil de Médécine Vétérinaire"; La Presse Vétérinaire (Paris); Annales de Médecine Vétérinaire (Brussels); L'Echo Vétérinaire (Liége); Berliner Thierärztliche Wochenschrift (Berlin); Topographische Anatomie der Körperhöhlen des Rindes, von Dr. Reinold Schmaltz (Berlin: R. Schoetz); La Gran Revista Argentina (Buenos Aires); Letter from Eugen Bass, veterinary surgeon, Graetz (Posen).

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

AUGUST, 1895.

TUMOUR ON THE URETERS OF A FOAL.

BY JOHN CONNOCHIE, ESQ., M.R.C.V.S., AYTON.

THE subject of the above case was a foal, seven weeks old. Shortly after birth it was noticed that the animal urinated frequently, and that some urine escaped from the umbilicus. Cold water and an astringent lotion were applied to the umbilicus, and in the course of a fortnight the opening closed up and the flow of urine was arrested. The foal seemed to be thriving well, and was otherwise apparently healthy, when suddenly one forenoon it showed symptoms of acute colic. A dose of castor oil was given, followed by doses of chlorodyne, at intervals of two and three hours. Blankets wrung out in hot water were kept in constant application to the abdomen, and an enema was given occasionally as no fæces were passed. In addition to the ordinary symptoms of colic, the foal strained severely and kept the penis almost constantly protruded. Early the following morning some fæces were passed, with difficulty, after a good deal of straining, and this seemed to relieve the animal considerably as it became much easier, but the breathing was short and hurried and the pulse quick. It was then noticed that the urine was very dark in colour, in fact, it seemed nearly pure blood, as it stained the hand if allowed to trickle over it. The animal kept fairly quiet throughout the day, and drank milk frequently, but towards evening the pain returned more severe than ever, and the little sufferer succumbed at midnight.

Post-mortem.—On opening the abdomen immediately in front of the umbilicus a large body, like a big bladder, presented itself to view, and this turned out to be actually the

bladder enormously distended. On opening it nothing except blood was visible, and it was mostly coagulated. I could not even smell urine. The bladder was firmly adherent to the umbilicus, the remnant of the umbilical cord containing the urachus being very much thickened. Immediately in front of the bladder, and covered by it, when in a distended state, was a tumour rather bigger than a man's hand. It was situated right between the ureters, in short, they seemed to become fused up in it, as they could not be traced between the tumour and the bladder, while between the kidneys and the tumour they were very visible and full of urine. The superior surface of the tumour was firmly attached to the lower surface of the lumbar vertebræ. On opening it, it seemed of a cystic character, with very thick walls, and contained some semi-fluid broken-down looking matter, with no smell and no appearance of pus. The kidneys were enlarged, flabby, and had a lobulated appearance. The distended bladder, pressing on the rectum, accounts for the non-passage of fæces.

(The kidneys were very large, weighing twenty-four ounces each. They were pale and their consistence was less firm than normal. The capsule was with difficulty removed. On section, the surface was of a uniform pale salmon colour; one could not distinguish cortex from medulla. It was sodden and looked as though it had been dipped in boiling water. The pelvis was dilated and the index finger could easily be pushed into the opening communicating with the ureter. The ureters were greatly dilated and thickened for about six inches, when they appeared to end in the tumour-like mass. When they emerged from it their walls and calibre appeared normal. The tumour which, as Mr. Connochie says, was cystic like, was lined by a smooth shining membrane, and closer examination revealed the fact that the growth was developed in connection with a large vein, the valves of which could be readily made out on the membrane lining the inside of the mass; this membrane was, in fact, the inner coat of the vein. Sections from the hardened kidney and tumour were examined microscopically. The tumour was a sarcomatous growth, consisting of large round cells and a good deal of hyaline and fibrous material, staining crimson with piero-carmine. In the kidney, many of the tubules in the medulla were dilated into cavernous spaces, void of epithelium. The collecting tubes in the cortex were dilated and thickened, and their pressure caused atrophy of many of the convoluted tubes in parts; the epithelium of these being

in a condition of catarrh and fatty degeneration. The capsule was thickened. The muscular coat of the arteries was hypertrophied, in some cases obliterating the lumen. It is most likely that the tumour was congenital and that the hæmorrhage was due to a rupture into the ureter of the vessel wall in connection with which the tumour was developed.)

SOME EXPERIENCES OF CASTRATION.

BY "HIRUDO."

THERE is perhaps no operation which the young practitioner is called on to perform that causes him more anxiety than that of castrating colts. If he is skilful and successful in this part of his duties, it often greatly assists him in gaining practice, while failure or want of dexterity is very prejudicial.

It may, therefore, not be uninteresting if the opinions formed from the experience of a good many castrating seasons are recorded, even although there is nothing particularly new in them. I have very little doubt but that colts can be as safely castrated by the actual cautery as by any other method; there are plenty of practitioners who have operated in this manner for years and with almost uniform success; still, it is at the best a clumsy and barbarous procedure, and the pain inflicted is greatly in excess of that which is entailed by ecraseur or torsion forceps.

Casting and Securing.—It is best in every case to use the hobbles. Put on a twitch and then the blinders, and there is no difficulty in getting the hobbles on.

When the colt is thrown and lies on his side, pass the end of the hobble chain round the neck and back along the breast between the four legs, and back again towards the neck, and pull on it (this brings the legs well forward). Now, holding firmly to the chain, have the animal pushed on to his back, a good man holding on to each fore-leg, pull the chain quite tight and fasten it by putting a little bolt between a link of the portion of chain coming round the neck and a link of that portion of the chain that you are pulling on. Now put on a back rope. Take a rope twenty feet long and double it. Fasten the doubled end to one hind-leg below the hock, and keeping it in front of the stifle pass it back to the tail on which you have placed a crupper (to keep the back rope from slipping forward). A loop of stout line will do for this crupper; having put the back rope through the crupper, bring it in front of the stifle and fasten it to the other

hind-leg, pulling as tight as possible, and at the same time pushing the hind-legs well down towards the abdomen.

Thus secured, there is little danger of the animal hurting himself, the legs are out of the operator's way, and the scrotum is well exposed. In using the hot iron, open the scrotum with the iron, and let the hole made be a small one; after the clam is on, divide the posterior portion of the cord with a knife, and sear off the anterior portion; pour a little solution of perchloride of mercury, 1 in 500, into the cavities. Take off the back rope, unscrew the nut from the bolt holding the chain, and pull the chain from below the neck before placing the animal on its side.

Adopt the same means for fastening when using the ecraseur, or when operating by torsion. I have had more experience of the ecraseur than of the torsion instrument, and will speak of the former. After opening the scrotum, and let the incision be a large one and well forward, place the chain over the testicle, and grasping the anterior part of the cord between the finger and thumb, pull it well up and give it to an assistant to hold, telling him to pinch it tightly and to pull it up; it is now tense, and disregarding altogether the rest of the organ, see that the chain of the ecraseur is deep down on the cord as you are screwing it home. If the testicle does not come off after the button of the ecraseur has travelled back to the handle, take hold of the chain and *rip* it through the tissue that still needs separating. Pour in a little of the perchloride solution and unfasten the rope and chain as before.

A piece of mesentery in fat colts occasionally protrudes; pull it up and cut it off before allowing the animal to rise. Have a leather head collar on as well as a halter, as halters have a nasty knack of slipping over the ears and coming off if the colt struggles much.

Sometimes, when the protruding omentum has been cut off and sufficient has not been removed, it adheres to the lips of the scrotal wound and grows out as a big granulating mass. To remove it cast the colt, and having put on a steel clam, sear through the pedicle of the mass.

Always cast the animal in a grass field if possible; straw is often dusty, and besides it gets into the chain and hobbles, and again one is apt to lose instruments, etc., in it.

When castrating without throwing the colt, the ecraseur is the best possible instrument to use. To secure the animal put on a twitch and the blinders; I think that it is best not to have a foot picked up. Stand on the near side, and grasping

the testicle make a big incision, and again see that it is well forward. Pull the anterior portion down and push the chain well up on this part of the cord and there need be no fear of hæmorrhage.

Both testicles can be taken off while the operator stands on the near side, though some practitioners take the left testicle off while standing on the near side and the right from the off side.

If wooden clams are used one precaution should be specially observed—see that the clams are long enough. They can do do harm by being too long, while I have known the severed artery escape from too small a clam in a big horse. The dressing for the clam may be made with thick gum solution and powdered sulphate of zinc and exsiccated sulphate of iron, or an ointment of perchloride of mercury, 1 in 20, may be used. While on the subject of clams I may say that it is quite possible to recover the divided spermatic artery if there is great hæmorrhage. In the accident mentioned above, where the artery escaped from the clam and there was every indication of fatal bleeding, I cast the horse, which weighed close on a ton, and put on the back rope, and after removing a pound or two of clotted blood from the scrotum managed to get the artery and put a clam on it, and the animal did well.

A word or two about rigs. They should be fastened according to the plan that I have endeavoured to describe for ordinary colts, but before attempting the more serious undertaking of opening the abdominal ring and putting the hand in, the rectum may be explored after an incision has been made in the scrotum to the outside and forward of the position where it is usually made. If the testicle can be felt per rectum, it is pushed up through the canal and a needle and thread passed through it from above; it can then be pulled up and taken off with the ecraseur. Should it be necessary to insert the hand into the abdominal cavity, a hooked knife is the best instrument to use in opening up the scrotum, and cutting down on to the ring. After the testicle is found and removed by the ecraseur, the parts should be well washed with perchloride of mercury solution, and then pulling the scrotum well up, take a few deep stitches with a seton needle and tape (going close to the abdominal parietes) and allow them to remain in for a week. As to after treatment of castrated colts, when the weather is favourable, turn the colts out on the day after the operation. In the case of older animals or in that of colts

previously kept in boxes, they should be placed where there is plenty of fresh air, the food should not be too stimulating—grass when it can be had, or bran is the best diet—and they should get exercise.

In castrating bulls I have never used anything but the knife. Open the scrotum, divide the posterior portion of the cord, and taking a turn of the anterior part round the index finger of the left hand pull on to it firmly; now push the knife in as deeply as it can be got, cut through the stretched vascular portion and the testicle is off. There is not the slightest danger of hæmorrhage, even in big bulls. They may be done in this manner either in the standing or in the recumbent position. Where bulls are thrown for castration they should be cast on the left side and the right hind-leg drawn well up towards the shoulder, by putting a halter round the neck, placing the shank round the leg above the hock and back to the neck, and then pulling up and tying.

At the request of humanitarian persons I have twice operated on colts and once on a calf under chloroform, and I am bound to say that my curiosity is abated with regard to castration while the animal is narcotised. The calf did all right, the only drawback being that I was an hour in the yard instead of five minutes, but I had trouble with both the colts. One of them lay for quarter of an hour after the operation was completed unable to rise, and when he did get up it took four men to support him into his box, where he stood swaying from side to side a most dejected-looking piece of horseflesh. It doubtless was a coincidence, but in both cases there was a great deal of swelling necessitating two or three subsequent visits. It should be remembered that, as pointed out by Lauder Brunton, it is more dangerous to perform a painful operation on an animal slightly narcotised than when no anæsthetic is used, for in the latter case the irritation of the sensory nerve, though it has a tendency to cause syncope this tendency is counteracted by the irritation causing a reflex contraction of the arterioles, and a raising of the blood pressure, while in slight anæsthesia this compensating reflex is paralysed, and the animal may die from shock. Anyone who has seen colts start feeding directly after the operation, as ordinarily performed, must admit that though doubtless a painful operation, the pain is of the most evanescent character.

To sum up, I believe that the best way of castrating horses is to operate with the ecraseur in the standing position. Occasionally a horse will be found so rough that it is impossible to do him standing. I don't think it advisable to

fight too long with them, but to resort to casting. There is really no occasion why a veterinary surgeon who has experience in castrating horses when cast should not attempt the operation in the standing position. As a rule, after one incision is made all that the colt does is to crouch down, or even to lie down, but a resolute man can keep hold of the ecraseur and finish the operation even then without difficulty.

I again repeat that the main thing to see to is that when the chain is tightening it is well up on the anterior part of the cord. Those who condemn the standing operation are usually those who have no experience in performing it themselves.

I have had one scirrhous cord following castration by the ecraseur, but have treated a good many that developed after the operation by actual cautery. Their removal is usually accomplished by dissecting out the tumour from its adhesions by the knife and fingers, and taking it off with the ecraseur or with the actual cautery. On two occasions in my practice the owners were afraid to have the tumour removed in this manner, and in each case, after casting the colt, I made a deep incision, going into the middle of the growth (which contained a quantity of straw-coloured serum and some myxomatous-looking tissue, which I scooped out), syringed the cavity with an astringent solution, sulphate or chloride of zinc, and in a short time the whole thing had disappeared.

A spare chain for the ecraseur should always be carried, as occasionally one breaks. It is very important that the chain be kept aseptic, and it is not an easy matter to ensure its being in this condition. Boil it and pick out any bits of tissue with a needle; then boil again, and after drying pass it several times through a gas-flame and keep it in a bottle of strong carbolic oil. Before using wipe it in a clean cloth and dip it as well as the knife in sublimate solution (1 in 500).

I fear that my remarks have been somewhat incoherently put together. Still, if they are helpful to some of my younger professional brethren, and encourage them to attempt an operation which requires merely a little dexterity and determination for its performance, I am satisfied.

TEXAS FEVER.

BY W. WILLIAMS, F.R.C.V.S., F.R.S.E., PRINCIPAL, NEW VETERINARY COLLEGE, EDINBURGH.

LATER studies of this disease have brought to light that it assumes two forms. An acute fatal type seen in the hot

summer months and a mild, rather prolonged, usually non-fatal form recognised only by an examination of the blood which must determine the presence of the micro-parasite in the red corpuscles and their approximate rate of destruction. This form is seen in the autumn when the heat of summer has passed away, also during October and November, and rarely in the first week of December. It is stated that the difference between the acute and mild type is accounted for by the fact that during a stage of its life—the small stage—the Texas Fever parasite circulates in the blood in a condition differing from that observed in acute cases; that in the latter it rapidly destroys the blood corpuscles giving rise to hæmoglobinuria, whereas in the mild form the destruction of the corpuscles is much more prolonged, and not associated with hæmoglobin in the urine.

It has also been observed that in certain cases when an animal has recovered from the acute attack, and the number of red corpuscles nearly reached the normal number, they have again diminished, and many of them contain the parasite in its small stage. The reason for this recurrence of the disease is not clearly defined, whether these second attacks are merely relapses or re-infections. As already stated the symptoms of the mild form are indefinite and may be confused with a variety of mild diseases, but the ACUTE FORM is manifested, suddenly in the hot summer months, and simultaneously in all animals of a herd which have been exposed to the same infection together.

The fever, characterised by a temperature of from 105° to 108° F., precedes outward symptoms for several days, the animals being apparently quite well. The pulse and respiration then become accelerated, and the urine is now observed to have the appearance of blood varying in colour, reddish, claret, or blackish red-water, hæmoglobinuria, in the most acutely fatal cases; out of 46 fatal cases (Bureau of Animal Industry, Washington, 1893), hæmoglobin was found in the urine in the bladder of 33 after death. It is uncertain whether this condition of the urine is present in all cases of the acute form, the opinion of the reporters to the American Bureau being that it "depends upon the rapidity with which the red corpuscles are infected and destroyed. A slower destruction may allow other organs to excrete the débris and thus forestall the discharge of hæmoglobin in the urine." But if free from hæmoglobin, the urine at the height of the fever is found to contain a small quantity of albumen, to have a specific gravity of 1030–40, may be strongly alkaline and

effervescent when treated with acids; but as the disease advances its specific gravity falls to 1010–12, its reaction becoming neutral or slightly acid. It sometimes contains small numbers of red corpuscles which may be derived from small hæmorrhages in the pelves of the kidneys regularly observed *post-mortem*.

The bowels are, as a rule, constipated during the high fever, but as the fever subsides, the fæces become softer and tinged with bile. After a few days' illness, the debility becomes very great, and whilst the animal is standing, trembling of the hind-quarters and limbs are prominent features in many cases; the blood is then found to have become very thin, pale and watery, due to the destruction of the red corpuscles. In the earlier stages, if freshly-drawn blood be allowed to stand, the serum will be found to present a very dark red colour, indicating the presence of much colouring matter in solution. Later on, this colour may not be present, but thinness of the blood, owing to destruction of the red corpuscles, seems to be the "most essential character of Texas fever."

The duration of the disease varies, proving fatal or disappearing in a few days; recovery, however, is associated with great debility; degenerations may occur in organs, and frequently there are relapses. Some animals never regain their health; in others, recovery takes place after weeks or months. High temperature rarely lasts longer than eight to ten days; it is then followed by a period of normal or subnormal temperature, the falling of the temperature marking the cessation of the destruction of the corpuscles, and the disappearance of the parasite from the blood. The mortality varies greatly. A mid-summer outbreak, when acute in its nature, is the most fatal, and from this time there may be all gradations towards the mild non-fatal form of the disease.

Etiology.—Several observers have reported the discovery of various forms of bacteria in this disease. In 1883, Salmon described a diplococcus obtained from spleen cultures. Detmers found bacilli and micrococci in the liver, but none in the blood; and in 1888, Billings claimed the discovery of what he terms the "true germ," an ovoid bacterium staining at the ends, similar to that of swine plague. All these contentions, however, have now been apparently terminated by the discovery of a parasite in the blood corpuscles, conveyed from southern to northern cattle by cattle ticks (*Boophilus bovis*). At the experimental station of the Bureau, near Washington, it was found by experiments in 1889, that the disease can be produced by ticks artificially hatched in the laboratory.

The parasites thus conveyed are found in certain proportions of the red corpuscles in the form of rounded or somewhat ovoid or pyriform bodies, isolated or in pairs, in the acute form of the disease; whilst in the mild form it appears that from 5 to 50 per cent. of the red corpuscles are found to contain coccus-like bodies, sometimes on the border, but outside the corpuscles; they are from $\frac{1}{27,000}$ to $\frac{1}{50,800}$ of an inch in diameter, sometimes dividing into two; they, as well as the larger pyriform bodies seen in the acute form stain with aqueous solutions of aniline dyes, and with hæmotoxyline. Both the large and small forms are considered to be different stages of the same parasitic protozoa (Pyosoma bigeminum, Dr. Theobald Smith). The smaller ones are found in cattle exposed to the disease late in the season, or during a second attack or relapse after passing through an acute attack and in milder cases during or previous to the season (hot) of the acute disease.

Post-mortem Appearances.—Congestion of the vessels and occasional patches of extravasation in the sub-cutaneous tissues, blood sometimes thin and watery, lungs normal or discoloured by congestive patches, heart congested; petechial patches on peri- and endocardium, spleen-congested, its capsule streaked from distension of its vessels; the weight of the organ varies, according to the stage of the disease in which the animal dies, the more rapid the fatal termination the larger the spleen; generally it is from two to four times its natural weight, distended, firm to the touch, its capsule attenuated, the pulp dark brown, glistening, and homogenous. The markings of the Malphigian bodies and of the trabeculæ have disappeared.

The liver is gravely altered, enlarged, sometimes of a dark colour from blood congestion, or light coloured from extreme bile-engorgement, gall bladder full of thick grumous bile; when incised, the cut surface presents a uniformly brownish-yellow colour, or else a mottled appearance, also seen on the surface. There is occlusion of the biliary canaliculi and ducts, and a more or less extensive fatty degeneration of the liver-cells, and a tendency to necrosis of the inner zone of the lobules.

The kidneys vary in colour according to the severity and stage of the disease; when death occurs in the early stages—when the bladder contains port-wine coloured urine, they are enlarged and of a uniform dark brownish-red colour, and the vessels are uniformly distended with red corpuscles; the secreting structures are not seemingly altered. In cases which die after the acute stage and fever have passed away, they are paler than natural and quite flabby, having pigmentary deposits

in the convoluted tubules, and their epithelium so loaded with a reddish-yellow pigment that they are easily traceable in their windings by their colour; in those cases where the capillaries are filled with red corpuscles the microbes are usually found in all the corpuscles. Extravasations of blood are found in the pelvis and ramifications, and in most cases the bladder is found to contain urine mixed with hæmoglobin, whilst ecchymosed spots are seen on the inner surface.

The digestive apparatus, with the exception of the abomasum, which is frequently congested, generally presents no definite alterations. The pyloric portion of the abomasum is found to contain deep ragged excavations with hæmorrhagic bases. The constancy of these ulcers, probably the result of vascular occlusion, is considered by Moreau Morris to be more certain indication of Texas fever than any other lesions commonly present.*

The intestinal lesions are congestions and pigmentation; they contain an increased quantity of bile. There are also tubercles containing very small nematode worms, similar to those discovered by Ostertag in cattle slaughtered at Berlin, and called by him *Strongylus convolutus*. These are, however, accidentals, and have no connection with the diseases, as supposed by Gamgee.

Prevention and Treatment.—If the disease is suspected, the herd should be examined thoroughly for ticks, and the animals' temperature taken. *The combination of ticks and fever, or the presence of the former in a locality where they do not naturally exist, may be considered a sure sign of the imminence of Texas fever.* (The italics are mine.) If the ticks are found they should be carefully removed, and the cattle at once transferred to uninfected grounds. The examination for ticks should be done repeatedly, and all ticks destroyed. These measures may not prevent all attacks, nor cut short the disease after it has once shown itself; but Reporters are satisfied that fewer animals will succumb. A single infection is sufficient to cause severe and prolonged disease, as shown by the injection of blood; but the mortality seems to be lower than in natural exposures, where the infection is intensified with every additional tick.

No special line of medical treatment has as yet been tried. Quinine and its preparations are proposed as possibly valuable, and methylene blue (recommended for malaria) is referred to as worthy of trial.

* These excavations are not infrequently found in British and other cattle perfectly free from disease.—W. W.

Inoculation with the blood of Southern cattle, apparently healthy, and with that of diseased Northern cattle, transmits the disease, and if this is done after the hot summer weather has passed, the induced disease may be of a mild character; but it appears that immunity is not assured, as it is reported by Dr. Dinwiddie that of vaccinated and non-vaccinated cattle sent to Texas 66⅔ per cent. of the vaccinated and 88⅔ of the non-vaccinated died.

Had there been a well-marked immunity conferred by inoculation, it would have been possible to have improved the method of procedure; and perhaps carefully-prepared blood serum, freed from the organism, might have been of great value. One remarkable instance is mentioned in the report, namely, that the Texas-fever parasite was found in the blood of a North Carolina animal three years after it had left the permanent infected territory.

Similar diseases are reported to prevail in the marshy regions of Roumania, investigated by Babes in 1888, disseminated largely by draught oxen. In the Cape of Good Hope, discovered in 1870, also conveyed from place to place by yoke oxen by keeping communication with the territory north of the colony, these cattle, like those of the Southern States, seem not to infect others directly, but they infect ground over which they have passed.

Infected pastures have been found to be harmless to sheep, and it is thought that other domesticated animals may graze unharmed in such pasture.

The discovery that the disease is conveyed by ticks, explains what has hitherto been very mysterious, namely, that Northern cattle become affected by the disease, when pastured on lands previously grazed by Southern cattle apparently in perfect health. This fact leads to the conclusion that Southern cattle recovered perhaps from previous attacks have acquired immunity, though covered with ticks.

Although it is clearly demonstrated that Southern cattle are dangerous when they bear the cattle tick, and that this tick conveys the micro-parasite from Southern cattle, but whether the disease is transmitted by diseased Northern cattle has led to some controversy. That such transmission is very rare (the reporters say) is evident, otherwise there would be no discussion and no divergent opinions, but if we turn to the life history of the tick we shall find the explanation sought.

Sick natives (Northern cattle) have ticks on them, but only those which survive the disease or die after a prolonged

attack ripen the tick on their bodies. Those which die of an acute attack in a short time after infection have only immature ticks on them. If the fever has occurred early enough in the season to permit a second generation of ticks to appear before the cold weather arrives, we may expect Texas fever in fields on which sick natives only have been pastured. Usually the first outbreak occurs in August, and the second to be looked for in late September or early in October, is so mild as to pass unobserved. If, however, the first outbreak occur in July the second may appear in September, and perhaps be of greater virulence.

When the disease is induced by inoculation, experiments have proved that it has no contagious properties, in fact, that it is not transmitted by cohabitation, but by the intermediation of the cattle tick. But as already stated, it seems to be concluded that preventive inoculation has so far been a failure, for the effect produced in the body of an animal by the destruction of the red corpuscles equal in amount to all those circulating in the body at any given time should make much more impression than any method of inoculation is likely to do. Yet such an attack not only does not prevent a second attack, but may not prevent death during a second attack. Aside from the difficulties attending the production of immunity under any circumstances, the difficulties of preparing a "vaccine" according to the method hitherto practised are, at present, insurmountable. The micro-organism cannot be cultivated. The infection of Northern cattle might be prevented by careful destruction of the ticks upon Southern cattle before their removal to northern territories, or by prohibiting their migration during hot weather. These suggestions are not however made by the Reporters, but they attach great importance to the protection of animals taken south into permanently infected pastures. They state that it is probable that if calves be taken they may, without treatment of any kind, survive the infection upon southern pastures, and become gradually insusceptible. But in case of animals more than 12 to 18 months old the first attack might be fatal; and, perhaps, the simplest way of dealing with older cattle is to endeavour to induce immunity by exposing them to infection at some specified time in autumn. In the latitude of Washington it was found that the most convenient time is the middle of September. In more northerly latitudes the exposure should be correspondingly earlier. Cattle exposed in this way invariably take the fever, but the mortality is very small. Such animals may die of a second attack

during the succeeding summer, but a mild exposure during the following autumn may furnish a sufficient protection.

Another method of inducing the disease is the injection of blood from infected cattle, which generally induces—if practised after the hot summer weather—mild attacks of the disease. The blood of Southern cattle will serve the same purpose.

Exposure to ticks during the cool autumn months is also recommended, being simpler, requiring no operation of the ticks being easily procurable from the permanently-infected Southern territory.

In concluding their observations upon these methods of protection, the Reporters say that their statements concerning the possible uses of mild infections as a means of subsequent protection must be regarded as mere suggestions, which may or may not prove of practical utility on a large scale.

The Tick. *Ixodes Bovis* (Riley).—This parasite was first described by Professsor C. V. Riley in 1868 as a reddish, coriaceous, flattened species, with body oblong-oval, contracted behind the middle, and with two longitudinal impressions above this contraction and three below it, more especially visible in the dried specimens. Head short and broad, not spined behind, with two deep round pits. Palpi and beak together unusually short, the palpi being slender. Labium short and broad, densely spined beneath. Mandibles smooth above, with terminal hooks. Thoracic shield distinct, one-third longer than wide, smooth and polished; coxæ not spined. Length of body 0·15 of an inch; width 0·09 of an inch. Further observations have made it clear that the above description probably applies to the adult male only; colour of the females being olive-brown on the back and slate-coloured on the belly. Dr. Cooper Curtice has shown that in the earlier or larval stage the young tick has three pairs of legs; after another week's sojourn on a calf (kept in an artificially heated stable, the season being advanced—November 15th), it was ready to moult. The emerging nymphal stage was provided with an additional pair of legs; after another week on the calf the tick was ready to moult again, and became sexually mature. It is thus shown that in this particular species of tick there are two periods of moulting before the parasite becomes mature. Curtice likewise created for it a new genus—*Boophilus*. It is classified by Dr. George Marx—Journ. Comp. Mecicine and Veterinary Archives—July, 1891, and January, 1892, as follows: Class *Arachinda*. Order, *acari*;

Sub-order, Cynohæstæ; Family, Rhipistornidæ; Genus, Boophilus; Species, Bovis.

A full-grown tick is said to lay on an average about 2,100 eggs in from eight to fifteen days; the ticks which take the longer time lay the larger number of eggs. In hatching these eggs, in glass dishes, with damp soil or leaves, the dishes being kept close to prevent the escape of the young brood, it was found that the period of incubation varied according to the surrounding temperature. When the weather was very hot, the hatching was completed in from 15 to 18 days. When the season is more advanced, or the temperature lowered, the period of hatching is prolonged to 25, 30, or even 40 days.

Conclusions.—(1) Texas cattle fever is a disease of the blood, characterized by a destruction of red corpuscles. The symptoms are partly due to the anæmia produced, partly to the large amount of débris in the blood, which is excreted with difficulty, and which causes derangement of the organs occupied with its removal.

(2) The destruction of the red corpuscles is due to a micro-organism or micro-parasite which lives within them. It belongs to the protozoa and passes through several distinct phases in the blood.

(3) Cattle from the permanently infected territory, though otherwise healthy, carry the micro-parasite of Texas fever in their blood.

(4) Texas fever may be produced in susceptible cattle by the direct inoculation of blood containing the micro-parasite.

(5) Texas fever in nature is transmitted from cattle which come from the permanently infected territory to cattle outside of this territory by the cattle tic (*Boophilus bovis*).

(6) The infection is carried by the progeny of the ticks which matured on infected cattle, and is inoculated by them directly into the blood of susceptible cattle.

(7) Sick natives may be a source of infection (when ticks are present).

(8) Texas fever is more fatal to adult than to young cattle.

(9) Two mild attacks or one severe attack will probably prevent a subsequent fatal attack in every case.

(10) Sheep, rabbits, guinea-pigs, and pigeons are insusceptible to direct inoculation. (Other animals have not been tested.)

(11) In the diagnosis of Texas fever in the living animal, the blood should always be examined microscopically if possible.

The regulations of the American Department of Agriculture provide for the prevention of the introduction of the disease into non-infected territories by the complete isolation of all cattle from infected territories between March 1st and December 1st of each year; on the proper disinfection of the litter and manure from such cattle during transportation. Furthermore such cattle can only be transported into uninfected territories for immediate slaughter during the prescribed periods.

There are further directions in the report without the scope of this paper. The author may, however, state that the report, covering 126 pages of closely printed matter in addition to nine pages of illustrations, is a most valuable one, conducted with great care by Theobald Smith, Ph.B., M.D., and F. L. Kilborne, B.Agr., B.V.S., under the direction of Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, Washington, 1893.

FURTHER OBSERVATIONS ON ANTIVENENE, AND ON THE PRODUCTION OF IMMUNITY AGAINST SERPENTS' VENOM; WITH AN ACCOUNT OF THE ANTIDOTAL PROPERTIES OF THE BLOOD SERUM OF VENOMOUS SERPENTS.*

BY PROFESSOR FRASER, M.D., F.R.S.

[*Abstract.*]

AT the time when my former paper was communicated to the Society, I was engaged in investigating several subjects closely related to those dealt with in that paper, but in regard to which the experimental work had not advanced sufficiently to allow definite statements to be made.

I propose, to-night, to make some statements on these subjects.

Antivenene of Rabbits protected against fifty times the minimum-lethal dose.—A description has already been given of the steps by which protection against fifty times the minimum-lethal dose of cobra venom had been produced in rabbits. The antidotal power of the antivenene derived from these rabbits has now been examined. When this antivenene was mixed with twice the minimum-lethal dose of cobra venom and the mixture injected under the skin of a rabbit, it was found that recovery occurred if the dose of antivenene was ·7 c.c. or ·6 c.c., but that the animal died if the dose was ·5 c.c. or ·4 c.c. per kilogramme. As ·65 c.c. per kilogramme of the antivenene

* Read 15th July, 1895.

derived from rabbits which had last received thirty times the minimum-lethal dose is able to prevent death when mixed with the same lethal dose of venom, this result is an unexpected one. It appears to show that the blood-serum of a rabbit which had last received thirty times the minimum-lethal dose of venom is almost as powerful as an antidote as the blood-serum of a rabbit which had last received fifty times the minimum-lethal dose. If this be the case, it is suggested that for any given species of animal there is a maximum limit to the quantity of antivenene which can be produced or retained in the blood, and that, in the case of the rabbit, this maximum limit is reached when the dose is thirty times the minimum-lethal or even somewhat less. It is also suggested that this maximum limit is reached before the maximum protection of the animal which had last received fifty times the minimum-lethal dose will survive a larger subsequent dose of venom than an animal which had last received only thirty times the minimum-lethal dose. It is probable, therefore, that protection depends not only on the presence in the body of an antidotal substance, but also on a modification in the re-action of the tissues, produced by frequently repeated administrations, which lessen the susceptibility of the tissues to the injurious action of the venom.

Antivenene derived from the Horse.—Since my former communication, also, the blood-serum of the horse then referred to, has been examined. The process of protection had been begun in February with one-fifth the minimum-lethal dose, estimated from the results obtained in other herbivorous animals. This dose was repeated in seven days, and again in five days. One-third the estimated minimum-lethal dose was next administered, then, on two occasions, one-half, then three-fourths, and then the actual minimum-lethal dose. By successive increments, the subcutaneous injections were continued until fifteen times the minimum-lethal was administered, four months and a half after the protecting process had been commenced.

Distinct general disturbance, including a rise of temperature, was produced by the earlier doses. The later and larger doses, however, have produced almost no general reaction, although both the earlier and the later doses have caused considerable local effects, and, conspicuously, subcutaneous œdema and necrosis of portions of the skin.

Ten days after fifteen times the estimated minimum-lethal dose had been administered, blood was taken, with careful antiseptic precautions, from the left jugular vein, and a con-

siderable quantity of serum has thus been obtained. A small portion of this serum was preserved in the liquid state, but the greater part was dried *in vacuo* over sulphuric acid. It yielded 11·5 per cent. of solids in the form of a brittle substance, which was easily broken into bright, transparent, orange-yellow fragments.

The antidotal properties of this serum have been examined in two series of experiments. In the first, the serum, or antivenene, was mixed with cobra venom outside of the body; and in the second, cobra venom was injected thirty minutes before the serum.

In the former series of experiments, it was found that ·005 c.c., ·004 c.c., ·003 c.c., ·002 c.c., and ·001 c.c. per kilogramme were each sufficient to prevent death from somewhat more than a minimum-lethal dose of venom, but than ·0005 c.c. ($\frac{1}{2000}$) was insufficient.

As the antivenene obtained from protected rabbits which had last received 30 times the minimum-lethal dose failed to prevent death, in the same conditions of experiment, when its dose was ·0025 c.c. ($\frac{1}{400}$th of a c.c.), the antivenene obtained from the horse is about twice as powerful as an antidote as the antivenene of rabbits protected against 30 and even 50 times the minimum-lethal dose.

When given 30 minutes after the same lethal dose of venom, this serum, further, was able to prevent death when the quantity injected was only ·5 c.c. per kilo.

In considering these results it must be recollected that the minimum-lethal dose of venom for horses has not yet been defined, and that no other data are available for forming an estimate than those derived from the determinations described in the former communication, which have been made in a few herbivorous animals. The dose last given to the horse may, therefore, have been considerably more than 15 times the minimum-lethal dose. On the other hand, it may be the case that the maximum production or retention of antivenene occurs in the horse and other herbivorous animals with 15 times the minimum-lethal dose, or, to use a chemical phrase, that with this dose the saturation-point of the blood has been reached.

Several interesting and practically important subjects for investigation are thus suggested, with regard to which information is likely to be obtained by an examination of the antivenene of the horse now undergoing protection, after the administration of the larger doses of venom which it is intended should be given.

Although it is certainly desirable that a still more powerful antivenene should be obtained, the antivenene already obtained is of sufficient antidotal power to be applied to the treatment of snake-bite in man; and I propose to send the greater part of it to India for this purpose.

For practical use, it is obvious that the antivenene in the dry state has advantages over a liquid preparation—in respect, for example, to portability, resistance to decomposition, and facility of subdivision into doses.

Some of these advantages are apparent when the specimens, now exhibited, of 15 c.c. of liquid antivenene are compared with the specimens of dry antivenene representing 15 c.c. of serum.

The facts which I had previously communicated to the Society show that the dry antivenene retains the original antidotal power of the liquid serum.

With this antivenene I have also made an experiment which illustrates its value when used as an antidote in actual practice, rather than when used merely for the purpose of defining its antidotal power in the rigidly adhered-to conditions of the experiments which have been described. ·5 c.c. per kilogramme having been found to be about the smallest quantity that can prevent death when given 30 minutes after rather more than the minimum-lethal dose of venom, this dose of venom was administered to a rabbit, and 30 minutes afterwards the insufficient dose of ·4 c.c. per kilogramme of antivenene. In three hours, the animal was lying extended with the head resting on the floor, limp and unable to stand; th respirations were infrequent and shallow; the cardiac action was feeble and irregular; and rattling sounds were being produced in the throat, from the excessive salivary and bronchial secretions always caused by toxic doses of cobra venom. A second dose, consisting of ·6 c.c. of antivenene, was now injected under the skin; and very soon a marked improvement occurred in the condition of the animal, the respirations becoming deeper, and the cardiac action stronger and more rapid, and without irregularity. An hour subsequently, a third dose of antivenene, consisting of ·5 c.c. per kilogramme, was injected, and further improvement was produced, so that all toxic symptoms soon disappeared, and the animal was restored to a nearly normal state, from which no relapse occurred until perfect recovery had become established.

(*To be continued.*)

Cases in Practice.

BY J. WALKER, NEW VETERINARY COLLEGE, EDINBURGH.

MULTIPLE PAPILLOMATA AFFECTING THE MOUTH OF A DOG.

A SIX-MONTHS-OLD collie pup was treated in June for warts in and about the mouth. They were of every size and shape, some the size of a pin's-head, some as big as a nut. On opening the mouth they were seen on the soft palate, and on the very back of the tongue; in these positions they were very small, while on the gums and on the skin outside the mouth they were larger and cauliflower-shaped. It is no exaggeration to say that there were dozens of them. As it was useless to attempt treating them locally, except so far as removing a few of the larger ones that interfered with mastication, the animal was put under a course of arsenic.

Fowler's solution was given in three-drop doses three times a day, and the dose increased to five drops. The treatment proved very successful. When last seen the warts had entirely disappeared from the inside of the mouth, and there were only a few outside.

STOMATITIS IN DOGS.

INFLAMMATION of the buccal mucous membrane is met with in the young of all animals, but it occurs with greatest frequency in the dog. Every lamb in a flock is sometimes affected, the disease being usually characterised by papules or vesicles on the mucous membrane of the mouth, and extending to the skin outside. It is usually a mild affection, and requires little treatment. Shepherds often use salt and brandy as a local remedy, but a solution of borax or chlorate of potash and glycerine forms a better application. In dogs, however, the inflammation is often more intense, so that there is not merely an infiltration between and below the epithelial cells with the formation of vesicles, but the deeper structures are involved, and then result patches of ulceration and loss of substance, not only within the mouth, but involving the skin round the oral cavity. Two cases recently treated at the College were typical of this condition. Both patients were young fox terriers. The mucous membrane of of the mouth was swollen and dark-coloured, and bled when handled. Scattered over its surface were raw patches, some livid, some yellowish-looking where the membrane was quite eroded. They were most numerous on the sides of the

tongue, and on the roof of the mouth. Outside, at the junction of the skin and mucous membrane and at both sides of the mouth, were raw granulating surfaces that looked as if pieces had been sliced away with a sharp knife. Saliva dribbled from the mouth and hung about the lips. The odour emitted was indescribably offensive. The treatment consisted of an aperient, and then bicarbonate of soda, and locally an electuary of borax, chlorate of potash, and honey. They both recovered in a fortnight.

PARACENTESIS ABDOMINIS IN THE DOG.

A YORKSHIRE terrier was brought to the College for treatment on May the 10th last. It was suffering from very pronounced ascites, walked with difficulty, but was cheerful and lively. Pulse 110, respiration 20 and shallow. It was treated with digitalis and acetate of potash, and had aperients of cream of tartar and jalap. As there was no improvement, tapping was resorted to. A wide bandage was put firmly round the belly, and as the animal lay on its side a trocar and canula was pushed into the abdomen, just in front of the sheath, through the linea alba, and nineteen ounces of fluid were withdrawn, the bandage being gradually tightened as the abdominal walls receded. The digitalis and acetate of potash were continued and the patient improved. Unfortunately, the owner took the dog away ten days after the operation, and an opportunity was not afforded of watching the progress of the case.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

ON Tuesday, 2nd inst., a special meeting and a quarterly meeting of Council of the Royal College of Veterinary Surgeons, were held at Red Lion Square, Mr. W. Hunting presiding. There were present :—Professors Dewar and Edgar, McCall, McFadyean, Penberthy, Pritchard and Williams, General Sir Frederick FitzWygram, Messrs. Abson, Barrett, Beddard, Bower, J. A. W. Dollar, Elphick, Faulkner, Frazer, Kidd, Locke, Lawson, Mason, Mulvey, Peele, Trigger, Wragg, and Mr. Hill, secretary.

The SECRETARY read the notice convening the meeting, and stated that he had received a letter from Mr. Lambert, of Dublin, regretting his inability to attend.

Election of President and Vice Presidents.

The PRESIDENT (Mr. Hunting): Our first business is the election of a president, and as this year it is, I believe, to be unanimous, I shall take advantage of my position here to propose the name of Mr. James Simpson.

Professor WILLIAMS: I have great pleasure in seconding the motion.

Professor MCCALL: I have great pleasure in supporting the nomination of Mr. Simpson. I think we are all unanimously of opinion that he should be elected as our president.

Carried by acclamation.

Mr. W. HUNTING then vacated the Presidential chair which was taken by Mr. James Simpson.

The PRESIDENT (Mr. James Simpson) in acknowledging his election said:—Gentlemen, my first duty on taking this chair is a very pleasant one, viz., to thank you very heartily for the great honour which you have bestowed upon me. It is an honour which I value to-day, and I am sure I shall value it none the less towards the end of my life. My predecessors have invariably been good business men, and many have been eminent in our profession. I, however, can make no claim to be eminent, but only claim to be the possessor of ordinary business ability. Your choice, therefore, to-day leads me to believe that you have recognized long service. I have had the honour of sitting at this Board for more than ten years, and I can only hope, from the fact of your having elected me to-day, that I have, at any rate, brought common sense to bear in the exercise of the duties which every member of the Council is supposed to have. There is nothing on the professional horizon which looks likely to interfere with the smooth working of the Council during this year, and I think the large number of changes which have taken place within the last year leads us to think that, for the time at least, we may rest on our oars. I think we may fairly do so, and see how the changes which have been brought about within the last few years work. I ask you to accept my renewed thanks, and my assurance that during the year it will be my endeavour to conduct the business in a way that will be as convenient to you as I hope it will be beneficial to the Council.

Mr. WRAGG: I have great pleasure in moving a vote of thanks to our late President, Mr. W. Hunting, for the very able manner in which he has conducted the proceedings during his year of office. He has occupied that position with great honour to himself, and with very great advantage to the veterinary profession.

Mr. TRIGGER: I have great pleasure in seconding the vote of thanks so ably proposed by Mr. Wragg, and I feel that I have some little claim in so doing, having had the pleasure of knowing Mr. Hunting, I think, longer than anyone else in this room—certainly nearer 30 than 25 years. I have also watched his career in the chair with great pleasure, and I am glad to say that I can thoroughly indorse the remarks he so admirably made at the annual meeting. I do hope that instead of going in for other measures, we shall now settle down to making ourselves thorough masters of the work here before us. I have great pleasure in seconding the vote of thanks to Mr. Hunting for the able manner in which he has filled the post of president during the past year.

The motion was carried by acclamation.

Mr. HUNTING: Mr. President and gentlemen, I thank you very much for the kind way in which you have passed this vote of thanks to me, and I can assure you it is really more than I expected.

The PRESIDENT stated that the next business was to elect six vice-presidents.

On a ballot being taken the following gentlemen were declared to be elected:—Messrs. Hunting, Trigger, Wragg, Mason, Professor Penberthy, and Professor Edgar.

Election of Secretary.

On the motion of Professor WILLIAMS, seconded by Professor PENBERTHY, Mr. A. W. Hill was unanimously re-elected Secretary and Registrar for the ensuing year.

Professor W. O. Williams was elected as the Member of Council from those successful at the recent election, to fill the place of Professor Thomas Walley, deceased.

QUARTERLY MEETING.

Mr. James Simpson, President, in the chair.

On the motion of Mr. FRAZER, seconded by Mr. HARTLEY, the minutes of the last meeting of Council were taken as read and confirmed.

Correspondence.

The SECRETARY read the following letter from the Board of Agriculture :—

"Board of Agriculture,
"4, Whitehall Place, London, S.W.
"18*th June*, 1895.

"Sir,—I am desired by the Board of Agriculture to inform you that on many occasions it has been urged upon the Board that it would be a great assistance to local authorities in their efforts to stamp out contagious diseases of animals if veterinary surgeons were required to notify the existence of any contagious diseases of animals which may come under their observation. Quite recently the same subject has again been somewhat forcibly brought before the notice of the Board in connection with the working of the Glanders or Farcy Order of 1894, it being contended that unless notification of glanders is made compulsory upon veterinary surgeons, all attempts to stamp out that disease will be seriously impeded. In these circumstances I am directed by the Board to ask that the Council of the Royal College of Veterinary Surgeons will favour them with their views on the subject, and will say whether they would see any objection to the veterinary profession being placed with regard to contagious diseases of animals in a similar position to that occupied by the medical profession under the Infectious Diseases (Notification) Act, 1889, it being understood as in that case, that a small fee would be paid for the notification of the disease. The matter is one of considerable importance, and the Council readily understand that before expressing any opinion in favour of the proposal the Board would wish to satisfy themselves, through the instrumentality of your Council, that it would commend itself to the Veterinary profession generally.—I am, sir, your obedient servant,

"T. H. ELLIOTT, *Secretary*."

Professor WILLIAMS: I would suggest that the Council express a desire that the Board of Agriculture should make every veterinary surgeon an inspector under the Contagious Diseases (Animals) Act; that every inspector be required to notify the outbreak of all contagious disease, and that he be paid an adequate fee for such notification.

Mr. BOWER seconded the proposal.

Mr. HUNTING: I forgot that I should not be in the chair when this matter came before the Council, and I wrote a draft reply to the Board of Agriculture, but did not send it. Personally, I think it would be the correct thing to follow the suit of the medical profession, on whom it has been made compulsory to notify all contagious diseases they see. I move, therefore, that we send a letter to the Board to that effect.

The PRESIDENT pointed out that the notification of disease by medical men was not compulsory except in those districts where the Act was adopted.

Professor MCFADYEAN seconded Mr. Hunting's proposition.

Mr. MULVEY: The subject of the letter that has been read from the Board of Agriculture is of so serious a character, as affecting veterinary surgeons, that I think it should not be put on one side at once, and I accordingly move that it be referred to a committee for consideration.

Mr. HARTLEY seconded this amendment.

Professor WILLIAMS asked leave to withdraw his proposition.

Professor DEWAR: I think that we should not take responsibility for the whole profession on this matter without giving it due consideration. I think it is apt to lead to friction between practitioners and clients, especially looking at the relation in which glanders is dealt with at the present time. I think the matter should receive every consideration before any proposition is resolved upon, and I beg to support Mr. Mulvey's amendment.

Mr. HUNTING: In lieu of my proposal, I will now move that the letter which I had drafted be sent by our Secretary to the Board of Agriculture. With the permission of the Council I will read it. It is as follows:—"Sir, I beg to say that I laid your letter before the Council of the Royal College of Veterinary Surgeons at their meeting on the 2nd inst. In reply, I am directed to say that the Council believe that compulsory notification by veterinary surgeons, similar to that required from the medical profession, would assist in the suppression of contagious diseases among animals. They see no objection to it, and believe that it would commend itself to the veterinary profession generally. I am also directed to add that the Council hope that the willing assistance, always given by the medical profession to the eradication of disease, may meet with more reciprocal return both from the Central and Local Authorities than has hitherto been the case. Every disease removed from the country necessarily reduces the remunerative employment of veterinary surgeons, and the hope of the profession that this loss would be balanced by a greater demand for their services as agents in preventive medicine has so far not been verified."

The PRESIDENT: You propose to substitute that for your resolution?

Mr. HUNTING: Yes.

Mr. Mulvey's amendment that the matter be referred to one of the standing committees was then put and carried; and it was agreed that the matter be referred to the General Purposes Committee when formed.

Letter from Professor McFadyean.

The SECRETARY read a letter from Professor McFadyean, dated June 22nd.

Professor MCFADYEAN: If I may be allowed I should like to explain what I refer to in my letter. There are some students under the three years' system who have just passed through their second, or B examinations, and some of them are so young that they would not be eligible for the C examination under the three years' system next May; at least one of these gentlemen, on my suggestion, is desirous of transferring himself to the students who are under the four years' system; that is to say he has passed his A and B now, and instead of presenting himself for the one examination under C and spending only one year more he is desirous of devoting two years further to the study of the final subjects, and to go up for the two examinations, namely, the C and D. examinations under the four years' system. It is a course which one could hardly have expected, but he is adopting the more difficult and costly one, and I did not anticipate the Council would raise any question as to it. I wish simply to ask the question publicly in order that I might, when this student becomes eligible, feel that I was doing no wrong in certifying him as eligible for the C examination under the four years' system.

Mr. MULVEY: I think it is quite competent for a student to transfer himself from one course to another, and I will accordingly move, "That this council sees no objection to students who have entered under the three years' course transferring themselves to the students under the four years' course for the C and D examination.

Mr. TRIGGER seconded the motion which was agreed to.

Presentations to the Library.

The SECRETARY announced the following presentations: A copy of his work on glanders by Mr. W. Hunting; the Quarterly Journal of the Veterinary Science in India; two bound volumes, 1883 and 1884, and unbound copies from 1882 to 1890, by Veterinary-Captain Smith.

On the motion of Mr. FAULKNER, seconded by Mr. MULVEY, a vote of thanks was accorded to the donors.

Finance Committee.

The SECRETARY read the report of the Finance Committee, which on the motion of Mr. LAWSON, seconded by Mr. MASON, was adopted.

Registration Committee.

The SECRETARY read the report of the Registration Committee, which with a slight verbal amendment was adopted, and the seal of the College was affixed to the various prosecutions.

Examination Committee.

The SECRETARY read the report which, on the motion of Mr. Hunting, was referred back to the Committee, for further consideration.

The various committees for the year were appointed.

Motion by Mr. Hunting—"Covering."

Mr. HUNTING: I do not think I need waste any time in explaining the motion standing in my name, because it was discussed at the last meeting, but will content myself with merely moving it, as follows:—"Any member of the Royal College of Veterinary Surgeons using or permitting to be used his title, degree, or description for the purpose of helping any non-registered person to practice veterinary medicine or surgery, or to sell medicines or appliances, shall be deemed to have committed an offence within the meaning of section 6 of the Veterinary Surgeons Act, 1881.

Mr. KIDD seconded the motion.

Mr. LOCKE: Are we to understand from this resolution that no veterinary surgeon can employ a non-qualified assistant.

Mr. HUNTING: Certainly not.

Mr. LOCKE: As I read this resolution no veterinary surgeon can employ an unqualified assistant without running the danger of committing an offence under Section 6.

Professor MCFADYEAN: When this was before the Council on a previous occasion I called attention to the fact that strictly speaking it forbids pupilage.

The PRESIDENT: When I gave notice of the resolution standing in my name I had no idea that I should occupy the position I do to-day, and it is just a question whether I should move it in opposition to Mr. Hunting. I thought Mr. Hunting's motion might, perhaps, be construed into a prohibition of employing unqualified assistants, or, as Professor McFadyean has pointed out, taking a pupil and allowing him to do anything. I considered, therefore, it was advisable to use the word "covering," and then the Council would have the power of putting their own interpretation upon what is and what is not "covering."

Mr. FAULKNER: Unfortunately, some of us were not present at the last meeting and did not hear Mr. Hunting's views with regard to his resolution. I may be wrong, but I take very much the same view as Mr. Locke. Suppose you have an unqualified assistant who is accustomed to dispense for you and sells things, such as colic draughts, and receives the money: I take it that he is working under the auspices and in the employment of a qualified member

of the profession, and I should like to know, if this motion is carried, whether that mode of doing business or practising in the profession would be prevented. The same remarks would apply to a pupil. I wish Mr. Hunting had given us his ideas, for no doubt they would have helped us in arriving at a conclusion.

Mr. HUNTING: Before the motion is put perhaps the President will allow me to reply, and then I shall be able to explain anything.

Professor PENBERTHY: Supposing a man is known to be practising veterinary medicine and surgery without a qualification, and a member of the College with a qualification comes in and unnerves a horse for him and allows the matter to go over to the unqualified man's client, as though he had unnerved the horse, I should like to ask Mr. Hunting if that would bring the qualified practitioner under this resolution.

Professor MCFADYEAN: I gather from some of the speakers that they object to the terms of this motion because it would make the employment of an unqualified assistant illegal. I suppose there would be no divergence of opinion if we were discussing the legality of an unqualified person doing a thing and taking pay for it, and I do not see that the principle is very different if a qualified veterinary surgeon employs him to perform an operation and he takes the pay for it. I think what we really have to consider is whether we shall adopt this motion or the one standing in the name of our President. I object to Mr. Hunting's motion, because I think it also forbids pupilage, which I should imagine we are all desirous of retaining. I suggest that he should amend the wording so as to declare that pupilage is not illegal.

Mr. TRIGGER: Though I am decidedly against a resolution which would prevent a general practitioner from employing an unqualified assistant, still I think this is certainly a question which will right itself in a very short time. We must remember that there are many men who have been occupying positions as unqualified assistants for 20 or 30 years, and if you pass a sweeping resolution you would be taking the bread from the mouths of those unfortunate men and throwing them on the union. Unqualified assistants are difficult to find to-day, except where they are old and valuable servants, and in a few years the engaging of an unqualified assistant will be almost an impossibility. I think, therefore, the Council must guard with very great care vested interests, no matter where they exist.

Mr. BARRETT: I regard this matter as a very important one, and I submit that a motion of this kind should not be carried by the Council, for, practically, if it is carried, a veterinary surgeon can neither have an unqualified assistant nor a pupil. I take it that this objection is not overruled by Mr. Simpson's motion. In my opinion a veterinary surgeon employing an unqualified assistant does cover him and protect him, by reason of his being in his employ. The same thing applies to pupilage. Both Mr. Hunting's and Mr. Simpson's motions are very serious ones, and in my opinion they should not be interfered with by this Council. In the event of this resolution being passed, veterinary surgeons in the country would have to discharge men who have, perhaps, been in their employment for several years. Though they are unqualified assistants they are deserving of consideration. It may be that it is from some misfortune that they have been unable to qualify, and now you ask us to throw them upon the world, irrespective of their past services and of the knowledge they have gained. It may also affect their wives and families, which would be very hard. I think a resolution of this kind ought not to be passed; but even if it is passed by the Council, it will never be carried out in the country. In order to meet the difficulty I would suggest the addition of these words at the end of Mr. Hunting's motion: "Except such non-registered person be in the service or pupilage of a member of the Royal College of Veterinary Surgeons." If that were inserted you would protect the unqualified

assistant and enable him to go on as before, and the same thing would apply to a pupil. If I am in order I will move that as an amendment.

Mr. FRASER: I will second that.

Professor EDGAR: I should like to point out that the law protects those gentlemen who are supposed to have had a vested interest for so many years, and no resolution that we can pass can over-ride it. Mr. Hunting definitely and advisedly says "any non-registered person." A man who has been acting as assistant to a veterinary surgeon for twenty years must of necessity be a registered practitioner. If he is not a registered practitioner, veterinary surgeons have to own themselves guilty of forcing upon the public men who attend their stock and animals—individuals whom this Council, through its examining body, say are unfit to be entrusted with the care of animals. We should be perpetrating a fraud upon the public. By bringing this motion forward Mr. Hunting will be protecting the public and doing them a great service. It is not our duty to protect unqualified men, or to force them upon the public as men fit to do work which only those who pass examinations should do.

Professor DEWAR: I respectfully submit to Mr. Faulkner and Professor Penberthy that it does not matter one bit what explanation Mr. Hunting gives of his motion, as it will stand on its own merit. I submit that the motion which stands in our President's name would leave the Council a certain liberty, as it were, to interpret the word "covering." I do not think, however, that it will generally be interpreted as Mr. Barrett interpreted it. I beg to move, as an amendment, the motion standing in Mr. Simpson's name, which is as follows:—"Any member of the Royal College of Veterinary Surgeons using, or permitting to be used, his title, degree, or description for the purpose of covering shall be deemed to have committed an offence within the meaning of Section 6 of the Veterinary Surgeons Act, 1881."

Mr. ABSON seconded the amendment.

Professor PRITCHARD: I am of opinion that none of these motions or amendments are necessary at all.

Mr. LAWSON: That, too, is my opinion.

The PRESIDENT: I should like to point out that our solicitor is desirous of having something passed which will give him the opportunity of advising us to prosecute in cases of "covering."

Mr. HUNTING: It is not my motion really—it is the solicitor's motion.

Mr. BOWER: I, for one, feel quite guilty upon this matter, being one of those who have a non-registered practitioner in my service as assistant. He is a very good man, having been at college for one session, but unfortunately he had not the chance of going there again. He has been with me for over 20 years, and of course does not profess to be more than an assistant. I know of others who are in the same position, and I suppose that if this motion is passed it means my getting rid of him.

Mr. HUNTING: Why did you not register him in 1881?

Mr. BOWER: I know I am to blame for that.

Mr. BARRETT: It is not part of your duty to register your assistant.

Mr. HUNTING, in reply, said, I should like to point out that apparently there is a misunderstanding about this altogether. By the Act of 1881 the Government has given us power to prevent unqualified practitioners from practising, but there are ways of evading that Act, one being by a qualified veterinary surgeon covering an unregistered man. Now there can be no worse offence than for a man in a profession to assist another to drive a hole through the Act of Parliament which protects them. The solicitor found that there was a difficulty in protecting the profession according to the law, and he drew this definition of covering. It is all very well to say that a man must not be guilty of covering, bnt the first time an action is brought against a man for

covering he would say "What do you mean by it," and then there might be the pleasure of having a discussion, perhaps for a day or two, to make out what "covering" is and what it is not. The solicitor went carefully through the Bye-Laws of the Royal College of Surgeons and the Royal College of Physicians to see what they had done, but those Acts not being alike he could not take the wording of the Regulations, and, therefore, he drew this as being the best legal definition that he could give of "covering," so as to enable us to protect ourselves from its evil effects. Now what has been said against it? Mr. Barrett tried to raise our sympathies by referring to the wives and families of men who had for 20 years been doing what they ought not to do, in other words, he would have us consider not an Act, our privileges, or public rights, but the wives and families of men who have been permitted to break the Act for 20 years. If they had only taken advantage of the Act of 1881 and been registered at the proper time we should have said nothing. That Act protects all these men.

Mr. BARRETT: I rise to a point of order. It is a matter of opinion whether a man does break the law.

Mr. HUNTING: That is not a point of order, it is an interruption. Professor Penberthy asked me also whether I could say that it was an act of covering for a veterinary surgeon to perform an operation for a man who was not registered. If he did it to help that man to get money, certainly he ought not to do it. It is an act of covering, and he ought to be punished. If, however, he did it for a man who had been in the habit of employing an unqualified man and was paid by the owner of the animal, I cannot say that there would be any harm in cutting out the unqualified man. Then it is said that this would interfere with men having pupils, and that it would interfere with "improvers." Doubtless it is only natural that school teachers and members of schools should object to our doing that. But we want to do nothing of the sort. It never entered into the solicitor's head, or mine, or anybody else's head connected with this matter that it would do so. The mere fact of a definition does not alter the Act or the law. The law now is as you find it. We are only trying to make the thing practical so that we can get at a man, and that he shall not be able to say, "You have not defined it, and you do not know what you are aiming at." If you like to take a very academic view of this resolution, and if the Council were all fools some day, it is possible that that Council might punish a man for having a pupil; but I cannot believe in such contingencies. I do not believe that the intelligence of this Council will ever stoop to that. Really, therefore, as far as I can see, the solicitor has drawn this resolution carefully and well. He tramples upon nobody's toes, and it further protects us according to the 1881 Act. Comparing it with the resolution which stands in Mr. Simpson's name, which has been proposed as an amendment by Professor Dewar, I may point out that we all think covering is illegal. We would all vote at once to punish a man for covering, but we do not know what covering is. The solicitor, therefore, has considered it necessary that we should say what covering is. This resolution attempts to do what Mr. Simpson's motion does not—it attempts to define what is "covering," and I say that that attempt does nobody any harm; on the contrary, it is calculated to clear away the difficulty, and do us all good. Then there was another brilliant idea of Mr. Barrett's. He wished to insert some such words as these —"Unless he be in the service of a veterinary surgeon." Naturally, he would always be in the service of a veterinary surgeon, and you supply him with the very argument, and make an excuse for him at once.

The PRESIDENT: We have before us Mr. Hunting's motion, which has been seconded by Mr. Kidd. Then there is an amendment proposed by Mr. Barrett, and seconded by Mr. Fraser, proposing to add these words to Mr. Hunting's resolution:—"Except such non-registered person be in the service

or pupilage of a member of the Royal College of Veterinary Surgeons." There is also an additional amendment proposed by Professor Dewar, and seconded by Mr. Simpson, in which he adopts my motion as follows :—" Any Member of the Royal College of Veterinary Surgeons using or permitting to be used his title, degree, or description for the purpose of covering shall be deemed to have committed an offence within the meaning of section 6 of the Veterinary Surgeons Act, 1881." I will put Mr. Barrett's amendment first.

Mr. BARRETT'S amendment was then put and lost; as was also Professor Dewar's amendment, nine voting for and 14 against.

The PRESIDENT: As these amendments are lost you are as you were. I will now call upon Mr. Hunting to move the next resolution.

Mr. HUNTING: The motion standing in my name is as follows :—" That the Council take into consideration the subject of a grant to The Worshipful Company of Farriers." Some three or four years ago this Council decided to stand in with two other bodies—The Worshipful Company of Farriers and the Royal Agricultural Society of England—to carry out a scheme of registration. Those three bodies have worked together, and are now carrying out that scheme. After a little difficulty and some hitches—some people might use stronger words about it—we have got that scheme into a fair working arrangement, and it is going on doing good work. Funds, however, are short. We, out of the three bodies, are the only one that has not subscribed. Now, it strikes me that this Council, and this profession, would not like to be in that invidious position much longer. I take it that you do not want this Council to do anything mean; and, even if you did think the Registration scheme was a bad one, you would contribute your mite, and then say you would have nothing more to do with the matter. But if you consider the scheme is a good one, and being properly carried out, I ask you to subscribe, and, by way of seeing what you will give, I suggest £50.

Mr. WRAGG seconded the motion.

Mr. BARRETT asked what amount the other bodies had subscribed.

Mr. HUNTING stated that the Royal Agricultural Society had subscribed 150 guineas; the Worshipful Company of Farriers, 250 guineas; and various private individuals sums ranging from £50 to £100.

Professor EDGAR expressed his surprise at the Council being asked to make such a grant, and thought that they would be voting away prematurely the funds of the College if Mr. Hunting's motion were adopted.

On the motion being put it was declared by the President to be carried, 8 voting for and 6 against.

The PRESIDENT moved the following resolution in his name, " That the name of Mr. Pettifer be restored to the Register, he having complied with the requirements of the Council."

Mr. HUNTING seconded the motion.

Mr. TRIGGER moved, as an amendment, that in view of the fact that certain indiscretions on the part of Mr. Pettifer had taken place the question of the restoration of his name to the Register be delayed until the October Meeting, to give Mr. Pettifer time to destroy all papers, so that no further mishaps might occur.

Professor MCCALL seconded the amendment, which after some discussion, was lost, and the original motion was carried, 7 voting for and 5 against.

Obituary List.

The SECRETARY read the obituary list, and on the motion of Mr. Mulvey, seconded by Mr. Wragg, it was resolved that a letter of condolence be sent to the family of the late Mr. Peter Taylor, who had for many years been a Member of Council.

On the motion of Professor Penberthy, seconded by Mr. Faulkner, a vote of thanks was passed to the President for his conduct in the chair.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

(*Continued from page* 56.)

Now, I want to know if mallein has a selective power. Has it a selective power for glanders lesions anywhere, or only for those lesions in the lungs? If it has a selective power, what action has it upon the lesion itself? Does it advance the lesion, does it alter it in any way, does it increase its size, change its consistency, or in what way does it act? Then I should like to know if tuberculine or any other organic fluid would have a similar action on a glandered horse? I have a recollection of some experiments performed with tuberculine, perhaps not as a diagnostic agent for glanders, but in the treatment of glanders; and I believe the result was that the glandered horse reacted to tuberculine fairly well. It is usually maintained that mallein is harmless on non-glandered horses. I do not wish to deny the statement, but I am not aware of any experiments conducted to prove that mallein is harmless to non-glandered horses. Assuming that mallein is harmless, it would be worth while to know if mallein has any protective power on a non-glandered animal, because if it can protect from glanders, it would be better to malleinise a whole stud than to pick the horses out by degrees. If it were once established that a malleinised horse would resist glanders, then, of course, there would be a very great demand for the agent, and we should be really adopting a prophylactic medicine.

Next we come to suppression. I do not intend to enter into the question of legislation, or to discuss what the Government may or ought to do, what the London County Council should do but does not do. I wish simply to refer to what should be done—nay, what ought to be done—in a stable where a few glandered horses have been picked out by mallein or some other diagnostic means. In the light of recent research and of present knowledge regarding glanders, is disinfection of an infected stable essential or superfluous? That is the question. If we knew the radius of infection, the vitality of the virus, it might be found that disinfection is entirely superfluous; that once you remove the living animal no further harm can result in a stable until another glandered animal is introduced. It might be found that there was no occasion to destroy fodder, to burn litter, to whitewash, to scrub, to pick up, or set about the damaging process of disinfection, which is so unpopular. But we are in a predicament at the present time. We do not know what happens in an infected stable. Hence disinfection is practised, and carried out, and recommended, and certainly it is a good thing. It is a good thing to disinfect on the same principle as that which led an old Scotch farmer to regard Sunday as a Godsend because on that day his servants got washed. And I believe that this disinfection, even if it is unnecessary or superfluous in the after-treatment of glanders, is a good thing for the stable, particularly in London. Now, on that point I would like Professor McFadyean's opinion whether he thinks, from his own knowledge of the disease, it is necessary to pursue this elaborate disinfection of premises. And a further question arises from this: when does he consider that a stable is free from infection or fit for the reception of fresh healthy stock. According to the discoverer Loeffler, the glanders bacillus dies a natural death after four months, if left to itself; but according to Cadéac and Malet, it is practically uninfective in a much shorter time. But my point is: when is the stable in a fit state for the stafe introduction of a fresh stock of uninfected animals? I have given you a few questions, and I have probably suggested some points that may be taken up by other members of the Society; and if I have not re-opened the discussion to your satisfaction, I have tried to do my duty.

Mr. J. A. W. Dollar said: Mr. President and Gentlemen, my appearance here this evening with a few books seems to have raised such apprehensions

on the other side of the table, that I hasten to allay the honourable members' fears by at once disavowing my attention of speaking for long. One book I have here, however, happens to be specially appropriate on the present occasion because it enables me to correct the suggestion that Professor Nocard did not recognise the possibility of infection through the digestive tract before the summer of last year. A statement to this effect has just been made by the learned professor on my right (Professor Macqueen), and I will, therefore, read you a short extract from the lectures on contagious diseases delivered by Professor Nocard during the year 1891-92, which will show you that even at that time the professor recognised the possibility of transmission of disease by ingestion. "This is precisely"—he says—"the danger in country inns. A large number of animals pass through them. The diseased ones may leave the germs of contagion in mangers and buckets which serve for all strange animals. Now, one knows that the horses of hawkers, canal bargemen and so on are often glandered, and as they only pass a single night—as a rule—at the same inn, one diseased animal may infect a large number of places or even a whole district." Then, again, he says :—"Although the ingestion of infected food may be the most ordinary method of contagion, it is rare that one finds a glanders lesion in the intestinal mucous membrane," That, I think, sufficiently disposes of the point that Professor Nocard did not recognise the possibility of infection by ingestion. Then a statement was made that Babès experimented on horses with the object of discovering whether it was possible to infect them by rubbing glanderous material into the skin, but that experiment, as far as I am able to ascertain, was not made on horses but on guinea-pigs; and Professor Nocard alludes to it here [in a book produced] and suggests that infection really takes place through very small injuries in the skin or that after infection the animal either scratches the place or that it is wounded by pieces of straw or other material in its bed. These points, however, are quite beside the question to which I wish to address myself this evening, and which is a very important one, that, namely, of how infection usually takes place. Does it occur (as Professor McFadyean stated) through the respiratory tract or does it take place also and frequently through the digestive tract? In regard to this question it may be interesting to note what has been discovered in other diseases, and I should like to draw attention to the experiments of the Russian discoverer, Wyssokowitsch who found that the intact mucous membrane of the lungs resisted the entry of germs of typhoid fever, staphylococcus pyogenes and several other diseases, even when injected into the trachea. Arnold—an English discoverer—also addresses himself to this question. He found that particles of emery, ultramarine, or even of such finely divided material as smoke did not penetrate to the interior of the lung, although coarse particles were taken up by the mucous membrane of the alimentary tract. Therefore, I think, we have some ground for considering that the entry of organisms through the pulmonary mucous membrane directly into the substance of the lung is somewhat difficult. On the other hand Koch and Villemin tried certain experiments with tubercle bacilli which were more successful, but the conditions were of such a peculiar character that they could scarcely be compared with the processes normally occurring in cases of glanders. They took a number of white mice and subjected them for half-an-hour on three successive days to the vapour produced by spraying tubercle bacilli into a closed box. The animals in such cases succumbed, and it was discovered that the same results could be produced by directly injecting a solution containing the bacilli into the trachea. But a very singular fact came out during those experiments. Although it was found perfectly easy to produce tuberculosis, either by spraying this infective material into a box and causing animals to inhale it, or by direct injection into the trachea, yet dry powders did not impart disease.

Now, I take it, if the disease (glanders) is usually spread by inhalation it is spread by dry powder, and therefore the experiments of Koch and Villemin would rather tend to contradict the suggestion that glanders is usually spread in that way I think that this point really deserves somewhat careful consideration. We are usually told that an animal suffering from glanders distributes the infective material over the wall of the box and on the fittings around it, that the discharge gradually dries, then breaks up into an exceedingly fine powder, which is carried by draughts of air to the uninfected animal, and is gradually drawn in along with the air inhaled. At the outset the theory seems to me to be met with a rather serious difficulty, because Loeffler, the discoverer of the disease, found that glanders bacilli died in eight days when exposed to the air on silk threads; and he found further that in no instance did they resist desiccation longer than three months. Renant, Pouch, Galtier and others went further, and showed that desiccation at once destroyed the virus. Then, again, we must remember that the animal is provided with a very elaborate filtering apparatus, in the turbinated bones and upper air passages, which are excellently contrived for catching every particle of dust that enters the nose, and which are almost sufficient to clear the air of everything except the very finest particles before it enters the lungs. I therefore think that we have to deal with two initial difficulties. At any rate, we have to explain how this moist discharge dries without the bacilli dying, and how the horny material so produced breaks up and becomes converted into fine powder,—a thing that seems to me exceedingly difficult to contrive even by design. Then it appears most peculiar that so large a quantity enters the lungs, and that if infection takes place through mucous membranes, the quantity which must necessarily lodge on the turbinated bones and in the upper air passages does not produce lesions there more frequently. Even when this discharge reaches the lungs there is a further difficulty which presents itself, We naturally enquire where is the powder most likely to be deposited; and to find cases tending to explain this point we may turn to diseases like "miner's lung," in which large quantities of fine coal dust are regularly inhaled, or to the cases of lead workers and wool sorters where a similar thing occurs. In these instances it is found that the whole lung is not affected, but a particular portion only, that, namely, where the air current is least pronounced; the point, in fact, where the circulation is almost *nil*.

Mr. W. HUNTING said we may roughly divide Professor McFadyean's paper into two parts, one of a clinical and sanitary character, and the second of a bacteriological and histological nature. On the two latter sections I should not venture to express any opinion. What Professor McFadyean tells me I accept with simple faith. With regard to the clinical part we differ in some respects, and I shall endeavour to give reasons for my difference on points where we fail to agree. Before doing so, I should like to refer to a question of Professor Macqueen's as to whether glanders is increasing or decreasing. I take it that nobody disputes that the disease is decreasing, and that the decrease is due chiefly to the work of the private veterinary surgeon and the spread of general intelligence. Even in my early days (and my friend, Mr. Shaw, has, perhaps, a larger experience of the state of things that formerly existed than any man in this room), even, I say, in my early professional days of thirty years ago, there was at least ten times more glanders prevalent throughout the country than now, and perhaps three or four times more than at the present time in London. To my mind it is a far-fetched theory to account for the spread of glanders on the hypothesis of dried bacilli passing into the lungs with the air after escaping all the dangers lying in wait for them. It seems simpler and more direct to accept the explanation that infection takes place through the alimentary tract by the living bacillus passing direct from a diseased horse into the food or water of another. As to tuber-

culosis I am not inclined to allow that the analogy holds at all. I do not know that tuberculosis is nearly always the result of inhalation. I have no right to say that it is not but I do not believe it is, and I want some proof of it. But even if this be so, it is a different disease to glanders. To begin with, you argue that because you find lesions very constant in the lung and very seldom in the abdominal viscera that the lung is the primary seat of infection. You say that in tuberculosis there are always lesions at the point of entrance of the bacillus through the bowels or skin. I say in glanders there are not. (Professor McFadyean: I did not say that.) When I say "you" I mean everybody who takes that side of the question. Now, in glanders it is different. You have more or less permanent lesions left as the result of the blocking in a part of the tubercle bacilli. If you have a gland once affected with tubercle, it is more or less permanently affected. In glanders this is not so. Even the large gland under the jaw may be double its normal size and soon resume its normal condition, and twelve months afterwards you cannot find a single trace of local lesion. And the same with the bowels. It is possible that if you were to make a *post-mortem* examination very shortly after infection by food, you might find some lesion in bowel or mesentery; but I have never found those lesions. Schutz says he has, and I am not inclined to allow that Schutz is right because he is a foreigner. I want to find a man in England who has seen bowel or mesenteric lesions. Until I find them I shall doubt their existence, and believe that the distinguished bacteriologist found something which he recognised as glanders, but which was not glanders. If there are glanders lesions in the skin, such as farcy buds, which clear up, so may lesions through the bowels clear up. If we once acknowledge—as we do acknowledge—that with water and food glanders may enter into the body, and having entered locate itself in the lung, why should we seek for another explanation of infection because another disease, not exactly analogous, is said to infect through the air passages? Passing away from this question, I chiefly want to touch on the means of suppression; but there are two or three points which I should first like shortly to notice. As to the vitality of the bacillus I know very little, but I certainly believe that when it fails to reach the lungs it does not survive very long, even in the horse. I say that because I should expect, if the bacillus floated about in the blood or lymph-stream, we should more constantly get local lesion. We know that a horse may have glanders bacilli in his lungs for years and years without an outward sign of disease. I believe, therefore, that unless the glanders bacilli gets comfortably lodged in the lungs, it perishes rapidly. The majority of cases of glanders are non-infective until some external symptoms develop. It might almost be regarded as a local disease of the lung—a local disease, however, which may at any time become infective or general by the bacilli escaping and passing from the lungs by the blood and lymph-vessels over the whole body. As to the incubative period, I have never experimentally tried it, but the shortest period I have yet come across is one month from the time of infection, and in that case the horse had lesions in the lungs. Now, between the incubative period of the disease and the latent period. I have before tried to draw a distinction—and there ought to be a distinction. The incubative period, I take it, is the time from when the bacillus enters the body to the time when you find lesions anywhere in the body. The latent period I take to be simply the period in which an animal may be infected and yet show no external symptoms of infection. I suppose that Professor McFadyean will tell us that there is no latent period now that we have got mallein to indicate the existence of lesions. With regard to curability, Professor McFadyean answers the question "do cases of glanders ever end in recovery?" in the affirmative. And Professor Macqueen gives us some particular cases of recovery. Personally, I think I know two or three undoubted cases. As to farcy—if I may

distinguish between the two forms—I know some dozens of cases of recovery. I am not going to say that there is any particular practical value to be attached to the fact that occasionally horses recover from glanders. The fact has one important bearing on stamping out the disease for the public good. If you allow that glanders is curable then you have one of the strongest arguments in favour of fair compensation during the process of stamping out, otherwise you would be killing a horse every now and then that is curable; and you have no right to do anything of the kind without paying compensation. With regard to "susceptibility," I do not believe a bit in the susceptibility of horses to glanders. I believe that the strongest and healthiest horse if he only gets the bacillus among his food (I don't know about the dry one in his air supply) will succumb to glanders, but it will be longer before he does succumb. I believe that the reason why glanders spreads more rapidly in stables where the horses are underfed, overworked and badly treated is simply this: You have under those conditions a much more rapid development of the disease—it more speedily reaches the stage at which it is most infective. In other words, as horsemen say, they "break up" more quickly. When you have more acute cases or more generalised disease the discharges from the body are more infectious, aod thus you have the disease spread very rapidly. With respect to diagnosis I will only say that I believe with Professor McFadyean that we have in mallein not only the best aid to diagnosis, but an instrument of diagnosis which is much more certain than any human being can possibly be. Mallein makes very few mistakes. It diagnoses cases which the cleverest and best observer cannot by any possibility diagnose. In 178 cases in which I have used mallein I have only seen three cases in which I failed to find any glanders lesions on the *post-mortem* examination. It may be in regard to the latter that I do not recognise the lesions, that I was unable to find them, or that they did not exist. I only state the fact that we could find nothing. I have never known mallein fail in detecting glanders when glanders was existent, so far as cases go in which I have seen the *post-mortem* examination.

As to means of suppression, mallein has, as Professor McFadyean states, removed our greatest difficulty; but I cannot allow that it is so indispensable as he says. The Professor says: "Does anyone suppose that in studs of hundreds of horses in which the disease has prevailed for years, the disease can be exterminated by isolation or slaughter of animals chronically glandered?" Prof. McFadyean overlooks the fact that we have stamped out glanders in studs of hundreds of horses without mallein. In the British army there are 16,000 horses, and glanders was stamped out among them some years ago without the aid of mallein. I do not say that to lower the claims of mallein; but I wish to point out that we were not absolutely useless before mallein was discovered. I believe myself that one of the great values of mallein, for some time to come, will be its use by the private practitioner, because authorities, local or central—the Board of Agriculture, for instance—are slow to accept anything new, or to do anything—well, they are slow. Individual effort has now a chance that it never had before. A man got tired of his veterinary surgeon, and of killing this and that animal, whilst year after year the disease decreased but remained. Now, if a veterinary surgeon gets hold of a sensible man—there are many of the other sort—he will allow him him to go through his stock with mallein. If he allows him to do this for a week or two, or a month or two, he will thus stop the spread of disease in a stud as you could not in any other way. Now, before expressing any views as to what I think should be the way in which the disease should be met, I want to take exception to two or three paragraphs of the essayist. He says: "If in any stud, however large, glanders continues to exist, the owner will have himself to blame." I am not going to dispute that as an abstract proposition, but I am going to object to it as a practical fair statement. I am going

to state that, under the circumstances, it is not right to impute blame to the horse-owner in London for having glanders in his stud. Everybody knows the extreme difficulty of getting rid of the disease, everybody knows how easy it is to have it re-introduced into a stud when once it is got rid of. Some of the cleanest and best-kept stables in London have suffered from glanders; and I unhesitatingly assert that there is no large stud in London that has ever remained wholly free from glanders for ten years. I myself have seen certain studs which have been reported to be free from glanders, and I know that the report was untrue.

Professor McFADYEAN: Not free from glanders for ten years?

Mr. HUNTING: Not for two, some of them. I know of no large stud clear for ten years. It is a man's misfortune to have glanders in his stud, not his fault.

Professor McFADYEAN: To get it.

Mr. HUNTING: It is his misfortune to get it and his misfortune to keep it. We will take an illustration. Suppose a widow left with 40 horses and a carrier's business. Suppose everything squared up and only a business connection and an infected stud left. You suggest that mallein should be used in her stable, and that if fifteen out of the forty horses react to mallein, they are to be killed. That would mean bankruptcy direct—absolute bankruptcy.

Professor McFADYEAN: I don't suggest it.

Mr. HUNTING: But I suggest it as being the logical outcome of your statement. She could probably avoid bankruptcy if she killed one or two of the horses occasionally. In that way it would take longer to stamp out the disease, but she would save her credit and not become bankrupt. The other plan means having a long purse indeed; it means such an interference with business as very few firms in London could stand. To kill 20 horses out of a stud of 100 horses, means upsetting that business, or the immediate purchase of 20 fresh horses, and you cannot buy 20 fresh horses whenever you like. I quite agree that if a man is in a position to stamp out all disease at one time, that would be the best thing in the end.

Professor McFADYEAN: I never advocated stamping out by slaughtering all the horses in a stable.

Mr. HUNTING: So far we agree. I believe very much myself in mallein a a valuable auxiliary. I believe, as Professor McFadyean says, that the great difficulty of stamping out of glanders has been that, without mallein, there were cases which could not be recognised; and so long as a case is unrecognised, it is extremely risky to wait for the development of symptoms. There are many cases where a glandered horse remains in the stable for months without infecting another horse. It is not at all uncommon to have five or six glandered horses in a hundred stall stable, and then no more. Professor McFadyean suggests that there should be a law prohibiting anyone from selling a horse from an infected stable unless all the horses had first been tested with mallein. The effect of that would be this: when you had cornered one or two men in that way, no owner would report a case of glanders. An owner would say, "I am not going to be had again like that, have my business interfered with and every horse tested with mallein simply because I reported. If I do not report, probably the existence of the disease in my stable will not be known; and, if the worst comes to the worst, I had better pay a fine of £20 for keeping my secret, than have my business upset." I have come across a strong supporter in this belief in the writer of a valuable article for farmers which appeared in the Royal Agricultural Society's Journal—I mean Professor Brown. Speaking of mallein he says: "Owners of horses will not be disposed to give notice of disease, still less to submit animals to mallein, unless they are sure of compensation." I agree with Professor Brown. It would pay horse-owners far

better to test the whole of their horses with mallein, and sell the dubious ones to their neighbours after the swelling had subsided. So long as the law does not prevent them doing that, and so long as no fair compensation is given, I fancy that individuals will use mallein to get rid of glanders, adopting the quicker, cheaper, and safer process of clearing himself by waiting until the swelling goes down, and then selling the infected animals. Would it not be better for the authority—local or central—to make some such voluntary arrangement with him as this: to say to him "knowing you have a case of glanders, if you will allow us to go through the whole of your stud and see which are affected, we will accept the reaction of mallein as indicative, and knock on the head every horse we find to be glandered. If we should make a mistake we will pay the full value for the animals not glandered, while for those which are glandered we will pay one-fourth the value." In that way you will induce men to report, in that way you would have perfect control and perfect command of the stable and not at a very great cost in the end. Of course such a plan would entail a heavy expenditure for two years, but would be found an economical as well as a speedy and an effective remedy for the existing evil.

Mr. SINGLETON: Considering the lateness of the hour and in view of a long journey homewards, I beg to propose that this discussion be adjourned to our next meeting; and I do so in perfect cognizance of the unfortunate conditions imposed upon one who moves such a resolution.

Mr. BUTTERS: I have great pleasure in seconding the motion.

The CHAIRMAN: May I ask Professor McFadyean whether he can make it convenient to come to our next meeting on May 2nd.

Professor MCFADYEAN: Unless something quite unforseen transpires to prevent me, I shall certainly come; I may say that I should come even to a continued discussion with pleasure.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

A QUARTERLY meeting of the members of this Association was held on Friday, May 10th, at the White Hart Hotel, Burton-on-Trent, the President, Mr. G. Wartnaby, occupying the chair. There were also present Messrs. J. J. Burchnall, Loughborough; F. J. Gooch, Stamford; H. M. Stanley, A. L. Gibson, John Blakeway, Birmingham; T. Slipper, H. Olver, Tamworth; E. G. Crowhurst, Leemington; J. R. Green, Alfreton; M. Sadler, Burton-on-Trent; H. J. Dawes, hon. sec., West Bromwich; and W. S. Carless, Worcester. Visitors: Messrs. E. R. Edwards and Rev. W. F. Drury.

Letters and telegrams of apology for non-attendance were read from the following: Professors Pritchard, Williams, Macqueen, Penberthy, Sir H. J. Simpson, Dr. Fleming, Messrs. Aris, Bailey, Brooks, Merrick, Malcolm, Captain Russell, Bambridge, Mason, and others.

Nomination of Members.

Mr. GOOCH gave notice that at the next meeting of the Association he should propose as a member Mr. H. Kidd, of Melton Mowbray, successor to one of their old members, the late Mr. H. J. Goodall.

The National Veterinary Association.

The HON. SECRETARY (Mr. H. J. Dawes) read a letter from the Provisional Committee appointed for the reception in Birmingham next July of the members of the National Veterinary Medical Association on the occasion of their annual meeting, asking this Association what they were desirous of doing in the matter of entertaining the visitors to the National gathering.

Mr. JOHN BLAKEWAY, acting on behalf of the Provisional Committee, explained the position of affairs, and suggested that a small committee be formed by this Association to take the matter up. He thought it was hardly fair to ask the members of the Provisional Committee to make up all the expenses out of their own pockets. The Midland Association had a certain amount of money at their backs, and they might set apart a certain sum for the entertainment of the National visitors.

The HON. SECRETARY thought they could not vote money for any purpose of which mention was not made upon the agenda.

Mr. OLVER moved that when the National Association have settled their programme, the officers of this Association send a circular to each member asking if they were prepared to subscribe individually to a fund, or support a resolution that the expenses come out of the funds of this Association.

Mr. W. S. CARLESS seconded.

Mr. BLAKEWAY, in answer to a question, said it had been proposed, although nothing definite was yet arranged, that on the third day a picnic or something of the kind be arranged.

Mr. GOOCH thought the third day would be a failure, as few visitors would stay after the second day.

Mr. STANLEY, who was of the same opinion as the previous speaker, moved that this Association be empowered to invite visitors to the dinner to be given on the first day.

Mr. OLVER suggested that the two resolutions be coupled, which was agreed to, and they were unanimously passed.

At a later stage of the meeting, upon it being pointed out that there was little time to be wasted in regard to the matter, the following resolution, proposed by Mr. Stanley and seconded by Mr. Blakeway, was also carried :— "That the officers of this Association form a committee, with power to act, for the purpose of making the necessary arrangements."

Candidates for the Council.

The HON. SECRETARY (Mr. H. J. Dawes) read a letter from the Lancashire Association, asking for the support of this Association in respect of the candidature of Mr. Samuel Locke, M.R.C.V.S., whom they were nominating for a seat upon the Council of the College.

Mr. CROWHURST thought this Association ought to have a candidate of their own, and he moved that Mr. Beddard be nominated in their interests.

Mr. OLVER seconded.

Mr. GREEN said he had been privately asked by several friends to allow himself to be nominated, but he certainly should not run in opposition to their friend and fellow member, Mr. Beddard.

Mr. Beddard's nomination having been unanimously agreed to, it was further resolved, on the motion of Mr. CROWHURST, seconded by Mr. GREEN, that the Hon. Secretary be instructed to write to the Lancashire Association, saying that this Association were anxious to run one of their own members for the Council, but that any support which could be given to them outside that would be cheerfully rendered.

Votes of Condolence.

The PRESIDENT said it was his painful duty to remind them that since their last meeting this Association had lost two valued members in Mr. Greaves, of Manchester, and Mr. Goodall, of Melton Mowbray. The late Mr. Greaves was one of the oldest members of the profession, and his face had been a familiar one for many years past. He was always ready to devote both time and money to the welfare of the profession. It was chiefly due to him that the Veterinary Benevolent and Friendly Society was put upon its legs, and

his death would create a loss which they would all feel. With regard to Mr. Goodall, he was a gentleman enjoying as wide a reputation as anyone practising at the present day. His genial smile made it a pleasure to meet him, and his removal would also be a source of sincere regret. He (the President) begged to move that letters of condolence and sympathy be sent to the families of those two gentlemen in their sad bereavement.

Mr. GOOCH seconded.

Mr. OLVER, in supporting, said it had been his privilege to know Mr. Greaves for 25 years, and he was held in the highest esteem by all with whom he was acquainted. He also agreed with what the President had said concerning the late Mr. Goodall, who was an able man and a kind friend, and one whom they could ill afford to lose.

Mr. CROWHURST, who was an old College chum of the late Mr. Goodall, having added a few words, the resolution was carried *sub silentio*.

Appointment of Auditors.

The TREASURER (Mr. J. Blakeway) moved, in accordance with notice duly given at the preceding meeting, "That rule 2 be so altered as to admit of the appointment of an official auditor or auditors." He had previously pointed out the necessity for the appointment of such gentlemen.

Mr. CROWHURST seconded.

The PRESIDENT said that personally he thought there was no necessity for auditors, but in deference to Mr. Blakeway, he should not object to their appointment.

The resolution was carried *nem. con.*

Mr. BLAKEWAY then moved, and Mr. GOOCH seconded, that Messrs. Stanley and Olver be the auditors until the end of the present financial year, which was likewise agreed to.

PRESIDENTIAL ADDRESS, BY G. WARTNABY.

Gentlemen,—I beg first of all to thank you for having elected me to the honourable position I occupy to-day as President of this important Association, and to assure you I appreciate most fully the honour conferred upon me. Your kindness in the past encourages me to look with confidence to your support in the future, which can alone enable me to fulfil the duties of my position. If, at the close of my year of office, I am able to feel I have in any way, however small, been of service to this Association, whose interests I have so much at heart, it will be a source of great pleasure and satisfaction to me.

Associations such as ours are excellent institutions. They have already worked changes which are highly beneficial to the members in many ways, promoting that social intercourse and good fellowship which undoubtedly, until these associations were formed, we as a body greatly lacked, and I would venture to think we benefit not only ourselves, but also the general public whose servants we are.

I am quite sure every man who intends to keep abreast with the times, and by so doing do his best for those who employ him, ought to join without delay. He will find his membership of great service to him in every way, as I can testify from my personal experience.

I should like here just to say a word to our younger members. We have in them, I am sure, excellent material, and I should wish to hear them take a prominent part in our discussions, and I take this opportunity of asking them, as a personal favour, to let us have the benefit of their views a little oftener in the future.

It is usual, and I think useful, on occasions like the present, to take a cursory glance at the general aspect of the profession. I do not intend,

however, to try your patience with a lengthy address, especially as my friend, Mr. Green, is to follow me with what I am sure will be an interesting and instructive paper.

I consider the whole profession has good reason to congratulate themselves on the composition of the Council. With such good men in power we must as a body advance. With regard to the educational branch of the profession our Council has done excellent work. At no time have we been better represented, or have we had men more able and willing to work for the general good, though often at the sacrifice of both time and money to themselves.

In extending the curriculum we are, I think, moving in the right direction; it will no doubt tend to raise the status of the profession, which is very good, very desirable, and is I am sure a subject for congratulation to us all, but the danger we have to guard against is this, lest this advance in theoretical education is at the expense of that practical knowledge without such no man, certainly no country practitioner, can hope to succeed.

It would be a great advantage to students if the teaching staff could see their way to set them free earlier in the year. April and May are by far the most important months so far as parturition and castration are concerned, and a young man who leaves college without having the opportunity afforded him of gaining a practical knowledge of a most important branch of his profession (no matter what his theoretical attainments may be), starts in life most unfairly handicapped, for it is just these cases, and I especially allude to difficult parturition—where if the young practitioner fails, as fail he most certainly will if he is without practical experience—a quack steps in, and with a skill born of long practice is able to bring the case to a successful issue. One such case as this I have quoted is enough to blight the prospects of the most promising young practitioner, the news spreads from market far and wide, and will take years to live down—on the other hand, I have often heard men say that their success dated from a difficult case of this kind, which they were able to bring to a successful termination.

In passing I would like to touch on three comparatively recent discoveries which ought, and no doubt will, have a most important influence on the profession. I refer to anti-toxin, mallein, and tuberculin.

Anti-toxin is likely to prove of incalculable benefit not only in reducing the mortality from diphtheria, that scourge of our infantile population, but tetanus appears to be also amenable to its action. (Though what the analogy between diphtheria and tetanus may be, I am unable to say). I know of two cases of tetanus which have recovered apparently under this treatment, and for my own part I think we may look with confidence for still greater discoveries in this direction and may reasonably hope that the mortality from diseases common to the human subject as well as to the animal, and which have hitherto defied the most skilful treatment, may in the near future be reduced to a minimum.

Mallein as a diagnostic agent ought to be turned to a better account, for in glanders we have a most fatal disease, attacking the horse and communicable to man, which might be stamped out, I believe, at less cost to the country than any other contagious disease taken in hand by our government up to the present time, if full advantage of the mallein test were taken.

Tuberculiu, like mallein, is at present but little used, and yet it is no doubt the most valuable means of diagnosing tuberculosis we at present possess. What an inestimable benefit would be conferred on the community at large if the Government would attack by its aid the milk alone, making the sale of that taken from tuberculous cows a penal offence; and by so doing, we should remove the chief source of danger, as milk is the principal food of young children. With the aid of tuberculin, under proper veterinary supervision,

I think that in three years time the number of tuberculous beasts would be enormously reduced. Owners would find that they were serving their own interests in ridding their herds of diseased animals; nor do I think in so doing there would be much actual loss, as the milk after boiling could be utilised in many other ways. Besides, if the Government eventually decided to stamp out tuberculosis by slaughter, the weeding out process which appears to be certain to follow the testing of milk would reduce to a comparatively simple matter what now appears a gigantic undertaking.

The grants made by our various societies in aid of the Institute of Preventive Medicine should, I think, meet with our cordial approval. I think it desirable that any invitation to join hands with the sister profession should be welcomed by us; there are many ways in which we could assist each other, notably in the inspection of meat.

I feel I must now mention a matter which is, I am sorry to say, not creditable to us as a body, I mean the professional evidence too often given in courts of law. We must many of us blush, inwardly if not outwardly, on reading these reports, and, gentlemen, this ought not to be; it is, I am sure, a state of things we of this Association earnestly deplore; we should lose no opportunity of protesting against a scandal that must inevitably lower us in the public esteem. It is, I fear, greatly due to a want of really honourable feeling amongst us, a want which I trust and think a higher standard of education will do much to supply.

Turning now to a more agreeable subject—even within my own recollection the *locus standi* of our profession has made vast strides. We have had the assistance of men whose exceptional ability and good fortune have placed them in a position above their fellows, and I wish here especially to mention the name of Dr. Geo. Fleming. No man has done more than he to raise us in the social scale, and when we most needed it; no other man, single-handed, at that time was able to do so much. There are others, too, whom I could name who have also done good service, and I am sure the whole profession, one and all, owes them a debt of gratitude which we shall do well to remember. We ought, I think, to feel the obligation to these men the more binding on us because there are others who in their different positions might, had their sense of duty equalled their opportunities, have done even more.

Our position to-day with regard to the Board of Agriculture is in an eminently unsatisfactory condition. A layman at the head of a department which can only be filled adequately by a veterinary surgeon (call that department by what name they will) is not only an insult to the whole veterinary profession but a mistake which will seriously affect the stock-owners of the country.

Against this gross injustice we have, through our Council, formally protested; but that is not enough. It is the duty of every one of us to do what we can individually to alter the present state of things.

For the Government to take shelter in the statement that the services of Professor Brown have been retained at the Board of Agriculture as consulting veterinary surgeon, at a salary of £300 a year, is either making a stalking-horse of Professor Brown, or else he, in accepting this post at such a reduced salary, is consulting neither his own dignity or the interests of his professional brethren.

Now, gentlemen, has not the time arrived when we should by combination do something to help ourselves? Let us live up to our excellent motto. Let us *unite*, and as a body *prove* that the veterinary profession is a factor that will in future have to be reckoned with before questions of vital importance to us can be settled.

I am extremely anxious, if you agree with me, that during my year of office a movement should be set on foot by this association, the object of which

shall be to send representatives from every one of our societies to form one great union, having power to deal with all important questions, every member being pledged to support his representative, and even to withhold our services where such a course is deemed necessary.

This, gentlemen, is, of course, only a bare outline of what I wish to see done in this direction, but I hope we shall go more fully into the matter at a future meeting.

"The Action and Value of the Anodynes and Purgatives used in Diseases of the Stomach and Intestines of the Horse." By J. R. Green, F.R.C.V.S., Alfreton.

Mr. President and Gentlemen,—When asked by my friend, our worthy President, to read a paper at this meeting, I had some little hesitation before accepting his invitation. In the first place I knew that amongst the older members of this association there were many who were better qualified, both by age and practical experience, to bring matters of interest before this meeting than I was, and secondly, I was painfully aware of my own shortcomings in that direction. Among the older members I may be thought to have a great amount of presumption in giving my opinion upon a subject which has probably engaged their attention for a number of years, and upon which even now they do not feel justified in making any bold assertions, but that is just the reason for my having chosen a subject so much open to discussion and debate. I am, to put it plainly, a seeker after further knowledge, and I do hope that in the discussion to follow I may greatly benefit by the opinions expressed by those whose experience is so much greater than my own.

Of the various diseases to which the horse is subject, there are none more common than those of the stomach and intestines, and in no instance is the use of medicines so much abused as in the treatment of these affections, "rule of thumb," or orthodox treatment, frequently being adopted without proper consideration of the cause and nature of the attack on the one hand, and of the therapeutic action of the agents on the other. The various purgatives and anodyne agents are often administered without discrimination, and unfavourable results of necessity follow. There are cases in which some hesitation would be shown before giving an aloetic purgative, if the action of such was properly understood, and some other means of emptying the bowels would be resorted to, and opium, the great sheet anchor of some, would be used with more caution than it is.

I intend in this paper to confine myself principally to therapeutic action of the different medicinal agents; but whilst referring to their use in their treatment of the various affections hereafter named, it will also be necessary to casually refer to the causes and symptoms of those diseases. The derangement of these organs are many, and vary much in nature and character, but I propose chiefly to refer to those in which the principal features are perverted action, obstruction, and pain in the adult animal. In the horse the stomach is, perhaps, less liable to disease or functional derangements than in the case of ruminants, owing, in the first place, to the simplicity of the organs, and, secondly, to the fact that only a portion of the work of digestion is thrown upon it, the other part of the process, along with assimilation and absorption, taking place in the intestines, but, nevertheless, we do get a large number of stomach cases.

The diseases of the stomach most frequently met with are simple indigestion, and impaction with distention, and gastritis. The principal bowel affections are: constipation, colic, impaction and obstruction (such as volvulus, intussusception, hernia, calculi, and parasites), and enteritis.

The inferences to be drawn and the opinions given in this article are based

chiefly upon observations and facts in connection with cases that have at different times come under my notice, but extracts from the records of others, or from text books, will be duly acknowledged.

The number of medicinal agents that come under the respective heads of anodynes and purgatives is large, but it is impossible to properly estimate the value of any one of them merely by its exhibition in one or two cases, and the opinions that I am about to venture, upon the efficacy of the different drugs employed, are given after repeated trials and carefully noted results.

The word therapeutic signifies the use of medicines in the treatment of diseases, and I take it that therapeutic action and value have different meanings. The first indicates the action of medicines upon the various organs of the body in disease, whilst the second is only to be estimated by the results of its use in a number of similar cases.

There are two classes of agents requisite in the treatment of abdominal affections, viz.:—Those which alleviate pain, and others which promote a proper action of the bowels. Those agents which subdue pain, either in a direct or indirect manner, are classed under various heads, viz.: anodynes or analgesics, narcotics, sedatives, anti-spasmodics, and hypnotics; and those which promote secretion and excretion are: laxatives, cholagogues, cathartics (purgatives) stimulants of musular fibre. In the first list may be placed opium, morphia, atropine, cannabis indica, ether, turpentine, chloral hydrate, aconite and chlorodyne; whilst the purgatives are: ol. lini, ol. ricini, aloes, aloin, croton oil, calomel, physostigmine, pilocarpine, and magnesium and sodium sulphates. It will thus be seen that we have at our disposal a great number of agents, but as they greatly differ in action a certain amount of discrimination is necessary in their use. For what may be used with beneficial results in one case may be detrimental in another.

Anodynes and analgesics relieve pain by diminishing excitability of nerves or nerve centres.

Opium.

The foremost in use is undoubtedly opium, or its alkaloid morphia, and there is no doubt in some cases its effects are beneficial, but that there are conditions in which it acts antagonistically cannot be denied. Medicinal doses are: anodyne, anti-spasmodic, they diminish congestion, relieve inflammation, lessen intestinal secretion and peristalsis, and sometimes cause sleep. In the horse the administration of opium is, in the first place followed by a period of excitement, and well-bred horses are not so easily brought under its influence. It is on account of the tendency to diminish secretions and peristalsis that opium acts as an antagonist to the action of whatever purgative has been administered; its use too frequently induces great nausea. I cannot say much in its favour in colic or impaction, but I have found its effects best manifested in enteritis and peritonitis, and in those cases which are characterised by severe and continuous pain with symptoms of inflammation, and where there is purging.

The alkaloid morphia is a most useful and valuable agent either to substitute for opium or to give when the drug itself is not admissible. It is quicker in action, handier to use, and, if a full dose be given, neither the preliminary excitement or nauseating effects are so marked as with opium itself. The preparations for hypodermic use are:—hydrochlorate and acetate, and doses varying from 2 to 4 grains are prescribed. In painful abdominal affections I am in favour of giving large doses at the onset if it is to be given at all. The addition of atropine in 1 or 2 grain doses of the sulphate increases the anodyne effect of the morphia and tends to excite peristalsis.

(*To be continued.*)

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE annual summer meeting of the above Society was held in the King's Arms Hotel, Berwick-on-Tweed, on Saturday, 6th July. The President of the Society, Mr. John Cameron, Berwick, presided, and before the meeting proper took place entertained the members present to a splendid luncheon. Among the company were :—Principal Williams, New Veterinary College, Edinburgh ; Mr. Peter Moir, Secretary, Edinburgh ; Mr. Clement Stephenson, Newcastle ; Mr. Hutton, Kelso ; Mr. Lothian, Duns ; Mr. Connochie, jun., Ayton ; Mr. Milne, East Linton ; Mr. Young, *North British Agriculturist.*

The PRESIDENT occupied the chair at the meeting, and called upon the Secretary to read the minutes of the previous meeting, which were unanimously adopted.

The SECRETARY then intimated apologies for absence from Professor McCall, Glasgow ; Professor W. Owen Williams ; Mr. Brydon, Newcastle ; Mr. Rutherford, Edinburgh ; Mr. David Dudgeon, Sunderland ; Mr. Andrew Hutchison, Beechwood, Perth ; Mr. McLachlan Young, and Mr. Awde, Stockton-on-Tees. He likewise intimated receipt of a letter of some importance from Mr. Rutherford, which was as follows :—

EDINBURGH.

DEAR MR. MOIR,—Had it been convenient for me to be at the Berwick meeting to-morrow, I would have asked for an expression of the opinion of those present on the growing, and I think very discreditable practice of solicitation by members of our profession. I endeavoured to get some expression of opinion at the last annual meeting of the Royal College of Veterinary Surgeons, but the President to my mind, rather fenced with than replied to what I said, and as no other person took the matter up, I am just afraid the subject is, if anything, rather delicate. Nevertheless, the question must not be burked, and I do think those of us who can honestly do so, should not hesitate to speak out. The practice is most contemptible, and I rather think under some circumstances, it is, from a professional point of view, disgraceful. What rubbish it is for a member of our profession talking of levelling ourselves up to the medical and some other professions while this, and one or two other and kindred practices are so common that the very public sneer at us on their account. I understand Mr. Cameron is to deal with tuberculosis. Might I draw the attention of the members to the desirability clamantly existing for all dairy cows being adequately tested for the presence or otherwise of this horrible disease? This, of course, is in the interest of public health. I believe something of the kind is being done in some countries ; nowhere is it more necessary than here, and I do hope that our profession will take its place in a work which is surely of the near future. It is a great disappointment to me not being present with you. My business for to-morrow cannot, however, be put aside. I hope your meeting will be a most successful one, and I shall look forward to the published account of it with probably more than usual interest.—Yours very truly,

R. RUTHERFORD.

The Secretary further intimated the absence of Mr. Boyd, Melrose ; and regretted neither of the clinical papers promised by that gentleman and Mr. Rutherford would be read, owing to their absence.

New Members.

The SECRETARY moved that Professor W. R. McDougall, B.Sc. of Edinburgh University, be a member of the Society.

Mr. HUTTON seconded.—Agreed.

Mr. CONNOCHIE proposed Mr. Milne, Ladykirk.

The SECRETARY seconded.—Agreed.

Condolence.

The SECRETARY intimated answers to letters of condolence, through death of members, from Mrs. E. Walley, widow of Principal Walley, and the sisters of the late Professor Lewis. He (the Secretary) moved that these replies be recorded in the minutes.

The Board of Agriculture.

The SECRETARY said he was also asked to write to the Royal College of

Veterinary Surgeons with reference to the letter received by this Society from the Central Veterinary Medical Society, touching the Board of Agriculture, and the changes that had been made in that Board connected with the veterinary profession, which were considered as very detrimental to the profession. He wrote to the Council of the Royal College of Veterinary Surgeons, stating that the action taken by that Society met with the unanimous approval of the members of the Society. Of course, they all knew that so far they had done their best, but had had no success.

The PRESIDENT said he supposed Mr. Moir had done everything possible with reference to these subjects. He suggested that the first half of Mr. Rutherford's letter be taken first, and the second could come on later.

Professor WILLIAMS said as far as he was concerned he only endorsed what had been said by Mr. Rutherford, and lately the status of the profession and its respectability in Edinburgh had been very much endangered by solicitation by men who really ought not to do such a thing. He had been in Edinburgh for 28 years, and it was only during the last two or three months there had been anything of the kind. Now, it was an everyday occurrence, and he thought a Society like that should take into consideration that this sort of conduct was not conducive to their elevation, and should express their opinion regarding it. It became harder now for a veterinary surgeon to make a living, and that might be used as an excuse for canvassing. He saw it recorded in that day's *Record* where a fellow of the Royal College of Veterinary Surgeons, and also a member of the Council, was advertising. That was not the first example of the kind, and, although he believed it was done for a good purpose, he felt that they were over-stepping their limits, and committing breaches of the law of etiquette every day of the week. He thought they should express their disapproval of advertising in the newspapers, and soliciting other people's clients. All the time he had been in Edinburgh he never had occasion to solicit or advertise, and he thought if men only showed a little patience they would obtain a better practice by not soliciting than otherwise.

The SECRETARY said it seemed to him that Mr. Rutherford had some personal grievance. There was no doubt, from the present state of the veterinary profession, the struggle for existence among the greater number of practitioners, that practices of a very objectionable nature were frequently resorted to. It was consolation to know that they, as a rule, recoiled on those mean enough to perpetrate them. The high reputation of Mr. Rutherford as a veterinarian was too firmly established for those who were canvassing his clients to harm him, but with younger practitioners such practices tended to do injury. Their Council, however, he was glad to say, was imbued with the desire to purify the profession, and were doing good work in that way. Many things were done by veterinary surgeons that had no parallel in the medical profession, and that most certainly retarded its social elevation.

The PRESIDENT said he could not say much on this subject from practical experience, and, seeing that the Royal College of Veterinary Surgeons were doing their duty in this matter, he did not think it necessary to go into detail on the subject, unless some member wished to move a resolution expressing their abhorrence of the subject.

Death of Members.

The PRESIDENT said they had to mourn the loss by death of two members —Mr. Bissett, of Brechin, and Mr. Kay, of Lochee. He did not know much of these two gentlemen personally, but perhaps the Secretary might add a word here.

The SECRETARY said both gentlemen were very estimable, very sound and loyal veterinarians, loyal to the society and loyal to the profession. He moved that letters of condolence be forwarded to the representatives.

Professor WILLIAMS seconded.—Agreed.

The PRESIDENT rose amid applause, and said: "I have great pleasure this day in giving you all a hearty welcome to Berwick-on-Tweed, also to thank you for adding another date to its history of renown. Once more the old town is in the hands of Scotland—the Scottish Metropolitan Veterinary Medical Association—a welcome change, even professionally. We meet everywhere, and invite our neighbours to join in a combat of love and learning, not as raiders of old, but for the national as well as for the professonal and personal good. On this occasion you are not to be favoured with a long, learned paper from some member of our own or sister profession, but I am not sure that is any great loss. I am inclined to think it would soon prove a benefit if we had some fixed rule of giving periodical opportunity to any member to bring forward any subject in which he finds difficulties. Jointly, we might be able to solve them, and cause one to feel specially benefited and consequently interested in our association's attendance. For example, the difficulty of "Pervious Urachus" in foals. Veterinary life and work in this town and district, like other places, is exempt from some diseases, while it has a greater monopoly of others. In this and surrounding districts we have an unusually large number of cases, mostly fatal, and often running their course very rapidly. I am told I have had by far the greatest number of cases of scirrhus of the os uteri. Of parturient apoplexy we generally have a fair share. This year, there has been more paralysis, combined with a small and diminishing amount of apoplexy. But the *fatal* cases have been fully as numerous. Sometimes in summer, when we have severe weather, we have had cases of apoplexy and paralysis in cows a considerable time calved. And without a knowledge of their history no one could have distinguished them from cases of ordinary parturient apoplexy of a bad type. For many years I have observed very distinctly that severe weather and cold draughts exercise a great causative influence in the disease, milk fever.

Although this is not properly a cattle breeding country, still I am compelled by observation to believe that tuberculosis is a good deal more prevalent among young animals than many writers would have us believe. On some occasions, among young calves, I have seen its contagious and fatal results very vividly demonstrated. In dairy cows, I believe, we are not so bad as in the south-west of Scotland; but I think the question of tuberculosis in all dairy cows is one which we should keep in *perpetual motion* until it is taken up and treated in a satisfactory manner by our authorities, both local and national. We should make it impossible for them to shelve the reports on this subject. I agree with anyone who says that veterinary surgeons—if they did so—would run a risk of being considered selfish agitators, as being personally and pecuniarily interested in the subject. But by whom? By those who do not know the subject. What does the able medical man say? What does anyone say who has made himself fairly acquainted with the extent and results of this disease? Does he not say—"You (veterinary surgeons) have known the subject all along, because you, and you only, have had the opportunities. You have known how it has been spreading in the bovine world; you have seen the great and increasing number of shockingly diseased animals which have been used to produce our milk supply and that without let or hindrance. You know the similarity of the nature and effect of the disease in man and animals. Therefore, you should have led and continued to lead, with zeal and energy, in this essentially necessary movement. But, have you done so? Have you not acted the coward a good deal? I ask the whole profession individually, what have we done? A number have done nobly; some a little; but the majority nothing. At present the subject is going forward without us, but it will require us all united to accomplish the desired end. Therefore let everyone be up and

doing—doing what ? First spreading a knowledge of the subject among all city and town authorities, county councils, parish councils, and every person whom you think has some amount of intelligenee and who takes any general interest in the public welfare. It has occurred to me quite recently that one of the best, easiest, and surest ways of spreading knowledge is by a number of us standing good for the first edition of a tract (size undecided) which would contain pertinent extracts from the numerous speeches and writings, which are now available. If every member were to spend a few shillings in this way, we would soon diffuse a knowledge and promote an interest which would rapidly extend. Also our authorities have little or no idea of the diseased condition in which many of our dairy cows are while supplying us with milk. Therefore we should make it convenient for them to see *post-mortems* of such cows. And, if hearing and seeing will not influence the authorities in our districts, to action in the right direction, then you are justified in calling the public to *post-mortem* demonstrations, to see for themselves. some of the sources of their milk supply. Again, why do the various Veterinary Medical Societies not send petitions to the Board of Agriculture asking them to go forward on this subject and specially so on the subject of veterinary inspection of all dairy cows, an item which would, alone, do a vast amount of good? Petitions to the Government should also be promoted, and sent from the public everywhere. Having given them a little education on the subject, I am sure each one would willingly lend all the aid in his power. Who does not want to be sure that his food is free from disease, especially for his children and infants? I have no doubt the question is being asked by some of you ; Who do you single out dairy cows? Are our pure-bred herds not very badly affected and urgently requiring to be taken in hand? I agree with you, but I am not at all sure that the course of action which may be found essential in the one case would be adopted in the other. Besides, the dairy cow department is by far the most urgent half of the subject. It means life and health or death and disease to thousands of the rising generation every day. We all know "Rome was not built in a day," and it is generally best not to attempt too much at one time, therefore I think it would be well to do justice to dairy cows first. In a general way, I think it may be said that we exist for the animal world, and the animal world specially belongs to agriculture ; therefore, our interests are much bound up together. During the last two years, the east of Scotland—which is specially a cattle-feeding district—and other districts as well, have been placed by the Board of Agriculture, in some important aspects, in a disadvantageous position. More recently it has put us in this district in the same position. Therefore, I think it is our duty, very specially in the present political convulsion, to use our influence individually to obtain the most distinct and positive assurance of personal help in seeing that justice and fair play is done to every interest, and that no person or party obtain any preference at the expense of another. I hope, also, that the conjoint professional agitation will be maintained until the desired results have been obtained. Considering what we have done for agriculturists, I think they and their associations should lend us their help to remove our grievance, which is their grievance also.

Mr. Stevenson said the subject of tuberculosis was one of the burning questions of the present day and of the future. He was struck with what the President said as to the amount of the disease in young calves. He believed that was not the experience of the profession generally. It was pretty well known it was rarely seen in calves. He had seen it in two young calves. In one case the mother died from milk fever, and making a *post-mortem*, tuberculosis was found in one lung. The calf lived for three weeks, and when slaughtered there was a large piece of tuberculosis on the same lung, as hard as could be.

He had not the slightest doubt that animal was calved with the tuberculosis in the lung. In the other case the calf was born—he was speaking a few days after the birth—suffering with heart affection. It died in the course of a few days. On making a *post mortem*, he found tuberculosis on the liver, accompanied with a weak, flabby heart. The cow that calved developed some curious symptoms, heavy breathing aud snoring, and when sent to be slaughtered it was found to be affected with tuberculosis. There was no doubt milk cows suffered most from tuberculosis, and the cow that gave most milk was most likely to suffer. Nowadays, cows were simply reduced to milking machines, and were more liable than otherwise on that account. They must remember that fat prize cattle were also very much affected with tuberculosis, and were never suspected during life. That was one of the difficult parts of the question to be taken in hand. He had had some experience of tuberculin, and so far, he believed, it was a fair good test. The previous Sunday he had three gentlemen at his farm, one a veterinary surgeon, and another a farmer from Copenhagen. He wanted to know what Denmark was doing, and he was told they had given tuberculin a very long test. It was done by Government, and affected animals were isolated from those not affected. But what about the calves? When they were born they were inoculated, and when it did not re-act they were considered healthy. When two years of age they were again inoculated before serving. He considered the milk of affected cows should be boiled before use. If the disease was general, the whole carcase should be destroyed as unfit for food, but if the flesh was firm and the colour good, he thought it might be used. If the udder of the cow was in any way affected, he believed the milk would also be affected.

The SECRETARY agreed with all Mr. Stephenson had said, and could only assume that the great obstacle in this country to the suppression of tuberculosis, was the want of money. The existence, the prevalence, and the evil consequences of its existence, had been conclusively proved, and we were still *in statu quo*. While that small but enlightened nation, Denmark, for the past two and a-half years, had been doing splendid work, in combating and clearing away the disease, surely our great nation should be as able to tackle this pestilence as our northern friends. It was nothing short of a shame and disgrace that disease was allowed to be disseminated throughout the country by dairy cows, when the pressing need of their veterinary supervision had been so abundantly and clearly proved.

Mr. STEPHENSON thought the Secretary was making a mistake, and from his own experience he felt that tuberculosis was not so prevalent now as in former years, which disputed the fact of poisoning by dairies.

Professor WILLIAMS referred to the presence of tuberculosis in horses, especially prize horses, and in all instances he traced this to the fact of their being reared on the milk of cows affected with that disease. He thought it a great mistake to condemn all carcases of animals affected with tuberculosis. When the flesh was soft and flabby it was certainly repugnant to have such food consumed, but if it were thoroughly cooked, it might not induce tuberculosis. Unless the meat was eaten nearly raw it might not affect a human being. He did not see why they should not license butchers to sell what was termed diseased meat, and if people got the meat at a cheap rate, and knowing also that a thorough cooking rendered it right, he did not see why they should not sell it. He was compelled to differ as to the increase of tuberculosis. His experience was quite as long as most men in the profession, and he considered there was far more tuberculosis now among cattle than there was in his younger days. He would not admit that it was due to their better observation now. Undoubtedly they did observe better now, but, at the same time, the contrast to his mind, having had opportunities of making *post-mortem*

examinations since he was a boy, he could say that very seldom indeed did they find it till now. He thought it high time Government stepped forward in this matter.

Mr. LOTHIAN, DUNS, also spoke of the increase of tuberculosis in Berwickshire, in his practice there being now four cases to one.

Several clinical cases and exhibitions were afterwards gone into by the members.

Mr. YOUNG, of *The North British Agriculturist*, proposed a very hearty vote of thanks to the President (Mr. Cameron) for his reception that day, and only regretted the smallness of the meeting.

The PRESIDENT returned thanks, and said if they had not had quantity they had quality.

It was next resolved that the Society should forward a petition on the subject of tuberculosis, through the R.C.V.S., to the Board of Agriculture.

The proceedings then terminated.

The following has been forwarded to the Minister of Agriculture :—

EDINBURGH, *25th July*, 1895.

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

To the President and Council of the Royal College of Veterinary Surgeons.

The President and members of the above Society, which numbers on its roll many of the leading veterinarians in Scotland, are of opinion that the rapid and alarming spread during late years of bovine tuberculosis among the cattle generally, and the dairy stock in particular, of Great Britain and Ireland, cannot but be regarded in the light of a great national danger, and that stringent measures to prevent the extension of this dangerous and insidious disease are urgently necessary, and should be at once entered upon.

They therefore respectfully request the influence and aid of the President and Council of the Royal College of Veterinary Surgeons, to bring these indisputable facts and the opinions formed thereon to the notice of the Minister of Agriculture.

Further, that the Royal Commission formed to investigate this disease, in relation to its danger to human life, have some months ago submitted their conclusions to the Government, that tuberculosis was prevalent in cattle, including dairy stock, and was communicable to mankind through the consumption as food of their milk and flesh, and that this Society regrets so grave a state of matters should continue to exist unheeded by the Government.

It is, moreover, their opinion—

1st. That bovine tuberculosis should be scheduled in the Contagious Diseases Act of 1894;

2nd. That all dairy cows should be placed under veterinary supervision;

3rd. That among all suspected herds and dairy stock the use of the diagnostic test, "tuberculin," under scientific supervision, should be made compulsory.

The co-operation and support of sister societies in the veterinary profession have been earnestly requested, as the Scottish Metropolitan Veterinary Medical Society considers that a duty has devolved upon the whole profession to combine to strengthen the cry to the Government for the adoption of measures whereby bovine tuberculosis in this country may be checked and ultimately extirpated.

It would, in conclusion, further point out, for the consideration of the Government, that the longer the delay the greater the difficulties and the attendant expense to cope with the disease that will inevitably follow.

Obituary.

THE death of Mr. William Barrow, the well-known veterinary surgeon of Newmarket, took place on July 15th, at the age of 79. By his demise Newmarket has lost one of its oldest and most highly-esteemed inhabitants. To all who knew him he was endeared by his cheerful disposition, his uprightness of conduct, and his strict sense of honour in the performance of those duties connected with the turf which have made his name famous in connection with so many of the most celebrated winners of the past four decades.

Bull, Wm. Robert, Etwall, Derbyshire, July, 1883.
Collins, James, late R.V.S., A.V.D., Fellow February, 1877. Graduated December, 1852—1867.
Freeman, C. B., A.V.D., May, 1889.
Callow, John, Horsham, May, 1852.
Lye, Charles Augustus, Crewkerne, Somerset, May, 1886.

THE RIGHT HON. T. H. HUXLEY, F.R.S., D.C.L., LL.D., &c.

In the late Professor Huxley, science mourns her most distinguished champion, and the medical profession has lost one of its most illustrious members. Like his great fellow-worker in the fields of science, Charles Darwin, he procured an appointment in the Navy at the outset of his career, which gave him opportunities for scientific work in a survey of New Guinea, the Louisiana Archipelago, and the Barrier Reefs of Australia that he took full advantage of. On his retirement from the Navy, he accepted the post of Palæontologist and Professor of Natural History in the School of Mines, and in the same year, 1854, he was appointed Fullerian Professor of Physiology in the Royal Institution, and Examiner in Physiology and Comparative Anatomy in the London University. In 1863 he became Professor of Comparative Anatomy of the Royal College of Surgeons; in short, it would be tedious to enumerate all the appointments he held, and the honours of which he was the recipient. One unique distinction (as far as scientific men are concerned) should be mentioned, that being his appointment to the Privy Council.

His was a versatile genius. He possessed a mind fitted to grasp any subject. The Royal Commissions on Vivisection, Contagious Diseases, Fisheries, Scottish Universities, &c., numbered him among their members, and his writings are without an equal in scientific literature in the points of incisiveness, strength, directness, and lucidity. Many subjects were graced by his pen, embracing works of great value. His work, "Lessons in Elementary Physiology," has run through numerous editions. Others that may be mentioned are "Lectures on Comparative Anatomy," Anatomy of Invertebrate Animals," "Science and Culture," "Construction or Evolution," "Anatomy of Vertebrate Animals," "Lay Sermons and Addresses," "Evolution and Ethics," besides numerous essays, not yet collected into book form. His life-long friend, Sir Joseph Fayrer, K.C.S.I., in one of our leading medical journals, writes of this great man in language that we cannot do better than quote:—

"The loss of the foremost biologist of this or any other country will be universally deplored, for he has for many years had a predominant influence on the progress of biological science, and the expansion of scientific teaching, which was not surpassed by even that of his friends, Darwin and Tyndall, and has contributed beyond all others to the advancement of natural knowledge and the promotion of the scientific methods of investigation of the problems of life. To this end the whole strength of his surpassing intellect was steadfastly, through good and evil report, devoted, and the results have been recorded in language so incisive and convincing, as to leave on all who have followed his teaching the impression of incontrovertible truth."

Professor Huxley was born in the year 1825, at Ealing, and interred in the cemetery at Finchley, July 4th, 1895.

Reviews.

THERAPEUTISCHES JAHRBUCH DER THIERHEILKUNDE FUR DAS JAHR, 1894. VON EUGEN BASS, THIERARZT: Berlin, Richard Schoetz (Price 3 mark=3s.),

This is a very useful and very interesting *brochure*, compiled by a practising

veterinary surgeon in Gräetz (Posen, Germany), and is a kind of compilation which might very advantageously and, we doubt not, very profitably be imitated by one or other of our enterprising and industrious English veterinary surgeons, if he could find an equally enterprising publisher; in this there ought to be no difficulty, we should think. In order to give our readers an idea of the scope and purpose of the book under review, we cannot do better than quote the preface: "The following pages," says Mr. Bass, "are intended to furnish my professional colleagues, occupied with the practical work of their profession, with an accurate survey of what has been accomplished in veterinary therapeutics during the year 1894, without the trouble of turning up all sorts of magazines and journals; and likewise to afford them an opportunity of learning with ease to themselves the pros and cons of all the great therapeutic questions that have been discussed during the past year. The practical veterinarian cannot take in all the veterinary journals, nor can he always afford to purchase every new edition of every work on therapeutics, and in very few cases does he think of making summaries for himself. The present year-book is intended to supply his needs in this direction. For the purpose I have had in view, I have made extracts from the various German and foreign journals of articles referring to therapeutics, and I have done this generally direct but sometimes, when as in the case of some foreign journals, the particular number could not be obtained, I have contented myself with quoted articles. My readers will understand that I have not incorporated everything, nor indeed anything without careful sifting: what was clearly worthless I have rejected."

To give our readers an illustration of the manner in which Mr. Bass has accomplished his task, we turn to page 20, where we find, under the title of Castration, twelve references to articles written by German, French, and English surgeons, with chapter and verse for those who wish to go deeper into the matter. Then follow short summaries of the more important among the articles referred to, and details of the medicaments used by the surgeons. An important article written by the eminent surgeon Pflug gets a whole page to itself, but the information given is so full and so comprehensive that one is not surprised at the amount of space granted to it. We recommend the book to those of our readers who understand German, as being a very useful compendium of information on the great variety of points. Let them not be terrified by such ponderous words as Samenstrangverhärtungen! The Germans are very patriotic and we admire their patriotism, but we wish it did not take this alarming form; that they would condescend to use Latin phrases more frequently, instead of these puzzling Teutonic combinations.

EXPERIMENTS ON LIVING ANIMALS.

THE Return showing the number of Experiments performed on Living Animals in the United Kingdom during the year 1894, under licenses granted under the Act, 39 and 40 Vict., c. 77, distinguishing Painless from Painful Experiments, has just been issued by order of the House of Commons.

It gives information of great interest and affords evidence that the veterinary is keeping abreast with the medical profession in its efforts to throw daylight on those mysteries of nature concerning which both professions have until now been in total darkness.

The total number who held licenses during 1894 was 185, of whom 56 performed no experiments. Those licenses and certificates have been granted only upon the recommendation of persons of high scientific standing, to gentlemen who, by their training and education, are fitted to undertake experimental work and to profit by it.

The total number of experiments performed in 1894, was 3,104; of these, 1,070 suffered no pain, as they were placed under complete anæsthesia from

before the operation until put out of life; 1,507 were merely inoculated, or hypodermically injected, the remainder being animals that were anæsthetised during operations, following which the wounds being dressed antiseptically, they suffered little or no pain during the healing process. Our veterinary colleges, notably the London institution, carried out 135 experiments.

ENLARGEMENT OF THE PROSTATE GLAND IN A GELDING.

BY JOSHUA A. NUNN, F.R.C.V.S., D.S.O., C.I.E., VETERINARY-CAPTAIN, ARMY VETERINARY DEPARTMENT; PRINCIPAL, LAHORE VETERINARY COLLEGE.

THE case in question was sent to the hospital of the Lahore Veterinary College in July, 1894, on account of his passing blood in the urine. The animal was an aged pony gelding and had been in the owner's possession for some little time, at least a year if not more, as far as could be made out. He had been regularly ridden and driven, was in good condition, and had been well fed and cared for. A few days before he had been noticed passing blood in the urine, which the owner stated he had never before observed since he had been his property. It was also noticed that there was a slight difficulty in urinating, the animal straining more than natural. No external wound or ulcer could be detected on the penis, and thinking that perhaps a calculus might be the cause of the trouble, the bladder was examined. On introducing the hand into the rectum an enlargement of the prostate gland was at once detected; the lateral lobes of the gland on each side of the urethra being as large as one's clenched fist. There was no pain caused by pressing on them, neither was there any sensation of heat conveyed to the hand in the rectum; the gland appeared to be of normal consistency, neither too hard nor too soft, the right lobe being somewhat larger than the left. The catheter was early passed, and as the owner could not lay the pony up Iodide of potassium, infusion of Bachu, and decoction of Ispaghul. (*Plantago Ispaghula* of Roxburgh) an indigenous drug largely used by natives in cystitis, uretheritis, and strangury (*vide* "Bazar Medicines of India," Waring, p. 106), was prescribed, the owner being told that if there was any difficulty in passing urine to bring the patient again to the College to have the catheter passed. He was also advised to give the pony laxative diet and an occasional enema to avoid mechanical irritation to the gland by the passage of hardened pellets of fæces as much as possible. The pony was lost sight of till June 15, 1895, when I accidentally came across him again, and on examination the enlargement of the prostate was found to have entirely disappeared, and no blood or difficulty in passing the urine had been experienced since the first attack. Hypertrophy or enlargement of the prostate appears to be anything but common in the horse. A case mentioned in Williams' "Veterinary Medicine," p. 726, is the only one I am able to find in the dog; it is frequently seen in old animals. The case in question appears to me to be unusual occurring in a gelding. The pony was aged, had been in the owner's possession a year or more, and although there is no history the inference is that he had been castrated some years before. While with his owner he was known to have enjoyed good health for a year. So it is to be presumed that the enlargement of the gland took place about the time the bloody urine was first noticed, and certainly within less than 12 months it had disappeared. Furthermore, what appears to me to make this particular case in a gelding of interest, is that for enlargement of the prostate gland in human beings, castration is advocated and performed, the gland afterwards shrinking (*vide* Proceedings of a meeting of the Clinical Society of London, April 26th, 1895), two cases in which orchotomy was performed for enlargement of the prostate by Mr. C. Mansell Moullin (*Medical Press*, May 1st, 1895), whereas in this patient enlargement

took place some years after the testicles had been removed, quite contrary to what one would expect. It would be exceedingly interesting if it could be ascertained, if, in any of the cases in the human subject in which castration had been performed for enlargement of the prostate, there was ever any recurrence of the trouble.

FITZWYGRAM PRIZES.

THERE were nine competitors entered for these prizes. The written portion of the examination was held in London and Edinburgh on the 6th June, and the *vivâ voce* on the 26th June at the Royal Horse Infirmary, Woolwich. The following is the result:—

No.	Written.	Vivâ voce.	Total marks.
57	655	1,515	2,170
60	695	1,350	2,045
90	645	1,350	1,995
81	630	1,290	1,920
74	868	1,005	1,873

No. 57, Mr. W. E. Ison, first prize, £50, Dick Veterinary College, Edinburgh.

No. 60, Mr. A. R. Routledge, second prize, £30, Dick Veterinary College, Edinburgh.

No. 90, Mr. J. Spreull, third prize, £20, New Veterinary College, Edinburgh.

The examiners were Veterinary-Captain Blenkinsop and Mr. Sidney Villar. Mr. A. W. Hill, hon. sec.

The questions set for the written portion were as follows:—

Anatomy.

(1) Give the attachments of the *diaphragm* of the horse and the structures passing through it.

(2) What muscles are attached to the *olecranon* of the horse? Give the nerve supply, and physiological action of each muscle.

(3) Define a serous cavity, and name those you know.

(4) Describe the circle of Willis, and state the structures it surrounds.

Physiology.

(1) Describe the differences in the secretion of the various *salivary glands* of the horse.

(2) Describe the mammary gland, and the difference between the composition of the milk of the cow, mare, and ass, giving, if possible, a table showing roughly the relative value of milk from each of these animals.

(3) Describe the progress of *deglutition*, giving the nervous mechanism as far as you know.

(4) What are the functions of the *iris* with reference to distinct vision? Describe briefly the relations of the *iris* to the nervous system.

Pathology.

(1) What do you understand by *immunity*, and what theories have been propounded to account for this condition?

(2) What are the chief points of difference between the bacillus of anthrax and black quarter?

(3) Mention the most diagnostic lesions usually found at a necropsy of an animal which has died from *swine fever*? With what other diseases may *swine fever* be most readily confounded?

(4) Describe the macroscopical and microscopical appearances of a glander nodule from the lung of the horse.

(5) Compare macroscopically and microscopically the lungs from a case of pleuro-pneumonia contagiosa and sporadic pneumonia of cattle.

(6) What do you understand by equine influenza? What are the most frequent complications of this disease?

CONTAGIOUS DISEASES ANIMALS ACTS, 1894.

Abstract of Returns for the week ending June 29th, 1895.

England and Wales.

Pleuro-Pneumonia.	Swine Fever.	Anthrax.	Glanders (including Farcy).	Rabies.	Foot-and-Mouth Disease.
None	Died ... 127 Slaughtered 1181 Slaughtered, suspected, but found free from Disease 66 1374	Fresh Outbreaks 4 Animals Attacked 7 Deaths 7	Fresh Outbreaks 18 Animals Attacked 24 Animals killed 21 Died ... 1	*Killed* Rabid Dogs 14 Rabid Cattle 1 Rabid Swine 3	None

* Wales, of Swine Fever 12 Died and Slaughtered.

Scotland.

None	Died ... 2 Slaughtered 14 Slaughtered, suspected 1 17	Fresh Outbreaks 2 Animals Attacked 2 Died 2	Fresh Outbreaks 1 Animal Attacked 1 Killed ... 1	None	None

Ireland.

None	Died ... 43 Slaughtered 83 Slaughtered, suspected but found free from Disease 38 164	None	None	*Killed* Rabid Dogs 18 Rabid Cattle 4 Rabid Swine 2 Dog Died 1 25	None

Abstract of Returns for the week ending July 6th, 1895.

England and Wales.

None	Died ... 176 Slaughtered 1291 Slaughtered, suspected but found free from Disease ... 36 1503	Fresh Outbreaks ... 9 Animals Attacked 14 Died ... 14	Fresh Outbreaks 19 Animals Attacked 25 Animals Killed 29	*Killed.* Rabid Dogs 8 ,, Cattle 1 ,, Sheep 2 ,, Swine 1 *Died.* Dogs ... 1 Swine ... 1	None

SCOTLAND.

Pleuro-Pneumonia.	Swine Fever.	Anthrax.	Glanders (including Farcy).	Rabies.	Foot-and Mouth Disease.
None	Died ... 1 Slaughtered 4 Slaughtered, as suspected but found free from Disease 2	Fresh Outbreaks... 1 Animals Attacked... 3 Died ... 3	Fresh Outbreaks — Killed ... 2	None	None

IRELAND.

None	Died ... 70 Slaughtered 128 Slaughtered, found free from disease 21 219	None.	None	Dogs Killed 12 Cattle ,, 1 Dogs Died 2	None

ABSTRACT OF RETURNS for the week ending July 13th, 1895.

ENGLAND AND WALES.

None	Died ... 109 Slaughtered 1229 Slaughtered, but found healthy 49 1387	Fresh Outbreaks 11 Animals Attacked 22 Died ... 9	Fresh Outbreaks 31 Animals Attacked 36 Killed ... 31 Died ... 2	*Killed.* Dogs ... 10 Cattle ... 1 Swine ... 1 12	None

* Wales, of Swine Fever, 2 died, 24 were slaughtered.

SCOTLAND.

None	Died ... 6 Slaughtered 46 Slaughtered, but found to be healthy 3 55	Fresh Outbreaks 1 Animals Attacked 1 Died ... 1	None	None	None

IRELAND.

None	Died ... 57 Slaughtered 84 Slaughtered, but found to be healthy 34 175	None	None	*Killed.* Rabid Dogs 17 ,, Cattle 3 ,, Sheep 1 ,, Cat ... 1 22	None

Summary of Returns.

Period.	Pleuro-Pneumonia.			Swine-Fever.			Anthrax.		Glanders (including Farcy).		Rabies.	Foot-and-Mouth-Disease.	
	Number of Cattle Slaughtered.				Number of Swine Slaughtered.								
	Diseased.	Having been in Contact.	Suspected.	Number of Swine Died of Swine-Fever.	Diseased or having been exposed to Infection.	Suspected.	Number of Fresh Outbreaks Reported.	Number of Animals Attacked.	Number of Fresh Outbreaks Reported.	Number of Animals Attacked.	Number of Diseased Animals Killed or Died.	Number of Fresh Outbreaks Reported.	Number of Animals Attacked.
Week ended July 13, 1895 ..	..	..	..	115	1275	52	12	23	31	36	12	..	..
Corresponding week in 1894	..	..	..	155	1383	32	8	11	26	49	5	..	..
Corresponding week in 1893	..	..	..	119	153	..	15	32	31	49	..	..	..
Corresponding week in 1892	..	..	3	144	277	..	5	14	34	89	1	..	..
Total for 28 Weeks, 1895 ..	..	43	10	5021	27289	852	262	593	548	859	466	..	..
Corresponding period in 1894	8	303	29	4364	39514	652	311	641	571	813	106	..	..
Corresponding period in 1893	13	346	43	3354	6109	..	258	615	773	1244	43	2	30
Corresponding period in 1892	90	987	112	3106	7393	..	141	320	825	1503	18	93	5262

NOTE.—The figures for the current Year are approximate only.

Board of Agriculture, 19*th July*, 1895.

ABDOMINAL SURGERY.

BY PROFESSOR J. MACQUEEN, F.R.C.V.S.

The numbers refer to a list of references given at the end of the paper.

In a moment of forgetfulness, influenced no doubt by the honour of the request, I promised to prepare a paper on Abdominal Surgery. At that time nothing seemed easier—the field was large and not much trodden; but subsequent consideration quickly dissipated my feeling of ease, and, like the Israelities, I soon discovered the want of "straw." Unable to make surgery without operations, I resolved to gather together, as far as I might be able, recorded cases illustrative of the subject, and to add what little I could to the experience of others.

It is conceded generally that in dogs, swine, and cattle the peritoneum can be opened, wounded, and mutilated, without danger to life, or even incurring serious spmptoms. But this confidence is usually withheld from similar wounds in horses, because of the supersensitiveness of the peritoneum to inflammation. Being unwilling to admit this peculiarity, which appears to me less real than imaginary, I shall not attempt to explain it. My fears concerning wounds of the horse's peritoneum were considerably relieved by seeing Farmer Miles castrate an abdominal cryptorchid in 1878, and later experience of Miles's method has done nothing to shake my belief in the possibilities of abdominal surgery. Having more faith in fact than theory, I venture to give abstracts of cases that show—perhaps better than experiments—the injuries the peritoneum will support without fatal consequences.

Bean (No. 1) attended a mare with omentum protruding from a wound of the abdomen. He excised twelve inches of the omentum, and sutured the wound. The mare recovered.

Gaullet (No. 2) treated a horse with a wound over seven and a half inches long, caused by a scythe. Portions of double colon and small intestine protruded. The colon was wounded for a length of two inches, and its contents escaped. The small intestine was replaced, the wound of the colon closed by a zigzag continuous suture, and the abdominal wound sutured in layers. Complete recovery occurred in six weeks.

Faussol (No. 2) was called to an ass with an irregular wound of the left flank, caused by a tree. About a foot of bowel protruded. Reposition and suture. Recovery in about five weeks.

Leblanc (No. 3), on February 4th, 1831, saw a horse that had been struck in the right flank by a cabriolet shaft, which penetrated nearly a foot into the abdomen, where it remained fixed in the wound. On withdrawing the shaft, blood flowed freely, and required a strong compress to stop it. At each expiration either blood or a blood-tinged fluid was forced from the wound which gaped and admitted air. Leblanc explored the wound, felt the undulatory movements of the bowels, and found the abdomen almost filled with fluid. As far as possible this fluid was removed, and the wound was closed with *dossil sutures*. Next morning the horse appeared very weak, with head resting on the manger, body leaning against the stall, and abdomen much distended. Leblanc untied the sutures, when half-a-pint of fluid escaped. He tried to get rid of more fluid by compressing the horse's sides, but much still remained. He thought of suction, but decided to make another opening lower down. He therefore incised the wall to the right of the umbilicus, and introduced a tube; fluid escaped, but not in large quantity. He altered the direction of the tube from time to time, and removed altogether about two pints of fluid. The tube was left in position, and the wound in the flank resutured. On the 7th the discharge from the tube was thicker and rust-coloured, on the 8th it was milky, and on the 9th it was pus-like and quantity increased. From the 10th to the 13th, purulent fluid continued to

fall from the tube. General condition of patient improved. Discharge continued unaltered till the 25th, when the horse—much better—walked without tottering. The horse was discharged from the infirmary and put to exercise on May 25th, and returned to ordinary work early in June.

KARKEEK (No. 4) attended a pony with ventral hernia, injured by a kick, which also wounded the colon. Wound closed by packing thread; abdominal sutures supported by compress. Recovered.

GUILLMOT (No. 5) treated a horse with a wound, through which small intestine protruded for seven hours. Enlarged the wound and replaced intestine. Recovered.

T. MAYER (No. 6) treated a horse with protruding omentum. He excised the omentum, sutured the wound, and applied a plaster. Recovery in eighteen days. Mayer mentions another similar case which recovered.

T. D. BROAD (No. 7) attended a mare that had been gored by a bull in the right flank. Wound three to four inches; protruding bowel very dark. The mare was cast, the bowel replaced, and the wound sutured in three layers with wire; an opening was left for drainage. Recovery in four weeks. Broad states that three persons were required to keep the bowels in the abdomen during the operation.

REY (No. 8) reports a case of abdominal wound, with perforation of the bowel, in a horse. Peritonitis occurred, but the patient recovered.

H. HOWSE (No. 9) treated a cart-horse with an abdominal wound, through which two feet of omentum protruded. Excision; sutures. Recovery.

VERRIER (No. 10) in performing taxis for reduction of scrotal hernia, lacerated the colon from within; a scrotal abscess formed. Recovery after castration.

GUILHEM (No. 11) attended a horse that had been gored by an ox. Penetrating wound on left side; protrusion of portion of large bowel, which showed a wound three inches long. After casting, horse was placed on his back; intestine—slightly red—was cleared of ingesta and washed with cold water. The edges of the wound in the gut were sewn together; a second suture closed the abdominal wall, and a third the skin. Compress applied; venesection. Next day: No fever; œdema around wound from scrotum to sternum; whitish liquid drops from the wound; no fæces passed. Third day: Patient eats greedily; urinates and defæcates without difficulty. Fourth day: Recovery promising; horse moves about, and tries to pick up straw from his litter; wound suppurating. Tenth day: Progress maintained; cutaneous and muscular sutures have fallen. Eighteenth day: Wound granulating and suppurating freely; œdema less. Thirty-third day: Completely recovered.

NICOLEAU (No. 12) treated a three months' old mule that had been gored by an ox. Lacerated wound, five inches by one inch and a-half. Twenty inches of small intestine protruded. Bowel red; constitutional disturbance *nil.* Mule cast, and gut returned without difficulty. Edges of wound pared to remove bruised parts; hæmorrhage slight. Muscular wound closed by a glover's suture, and skin by six interrupted sutures. Compress soaked in weak alcohol supplied, and supported by bandages. Mule rose with difficulty after the operation. Fourth day: Case has made steady progress; no fever; wound swollen; inferior commissure slit open for drainage, and dressed with Egyptiacum ointment. Seventh day: Wound healthy, granulating; two or three sutures that had sloughed were replaced. Tenth day: Wound healing; dressing had been torn off by patient. Twenty-sixth day: Cured.

STORRY (No. 13) reports a case of ventral hernia in a horse caused by goring. He opened the hernial sac, and reduced by taxis. Recovery.

B. KETTLE (No. 14) attended a colt with abdominal wound; bowel lacerated and contents escaped. Sutured gut with fine white silk, and forced bowels back into abdomen. Closed parietes with metallic sutures. Complete

recovery in a month. Kettle remarks that in 1843 he had a case of rupture, with protrusion of omentum and intestine, which was swollen and thickened. Treated by fomentations and scarification; recovery followed. Kettle also refers to the general dread of peritonitis in such cases, and thinks the danger of this complication has been greatly magnified.

NEWTON (No. 15) reports a case of abdominal wound in a colt. Ten to eleven feet of bowel protruded. After reposition, suture, and the application of a bandage, recovery took place in three weeks.

DYER (No. 16) treated ventral hernia in a filly by incision of the sac, including peritoneum, and sutured the wound in layers. Recovery.

TAYLOR (No. 17) attended a pony with protruding intestine. The patient was chloroformed, wound enlarged, bowel replaced, and the wound closed by continuous thread sutures. Recovery in three weeks.

BOVETT (No. 18). Abdominal wound in a cob; colon protruded; reposition and suture. Recovery in six weeks.

LEWIS (No. 19). Colt with ventral hernia. Sac laid open, reduction, and metallic sutures. Recovery.

EMMOTT (No. 20). Filly. Escape of thirty inches of omentum. Excision and suture. Recovery.

MOTTET (No. 21). Mare with umbilical epiplocele following puncture of œdematous swelling. Excision of omentum and sutures. Recovery.

ANDERTON (No. 22). Horse. Abdominal wound eight inches long. Omentum and part of colon protruded. Reduction, sutures, and compress. Recovery.

OWLES (No. 23). Mare with strangulated ventral hernia. Manipulation failed. Opening enlarged; reduction; sutures. Recovery.

DROLSHAGEN (No. 24) treated a foal with a wound caused by horning. Omentum and bowel prolapsed. After cleansing, excised a portion of omentum, reduced the bowel, and sutured the wound. Recovery in three weeks.

KLEMPAUL (No. 24) attended a mare with a wound near the umbilicus, caused by harrows. Small intestine protruded; reduction. The mare recovered, and fourteen days later gave birth to a foal.

RICHTER (No. 24) in setoning the abdomen used a bistoury. After operation, ingesta issued from the wound, and subsequeut examination revealed a wound of the cæcum. Six to seven quarts of fluid were discharged. Recovery in eight days.

JEWSEJENKO (No. 25) in Russo-Turkish war noted thirty-one abdominal wounds in horses. Of eight with shot-wounds of the bowels, five died of peritonitis, and three recovered after suturing the wounds. In two, wounds of stomach by splinters led to death. One gastric wound by ball was sutured and healed.

STOCKFLETH (No. 25) mentions twenty-seven abdominal wounds, with prolapse in fifteen. Of fourteen horses, two mules, two cows, and one dog—two horses, one cow, and one mule died.

CRUZEL (No. 26) reports a case of abdominal injury caused by horning in an ox. The swelling was opened, and a cicatrized rupture of the rumen discovered, with about eight pounds of ingesta between the stomach and skin. The wounds were cleansed and relieved of necrotic tissue. A compress was applied and the diet restricted. Recovery in fifteen days. Some time afterwards the ox was slaughtered. Examination revealed adhesion between stomach and abdominal muscles, and a small abscess in centre of attachment.

J. STOWRAR (No. 27) attended a cow that had been gored in the right flank. Swelling as large as a bushel measure. He diagnosed strangulated hernia, and tried to reduce it, but failed. He next opened the sac and "attempted

to knead in the gorged intestine," without success. Having placed the cow on her back, he incised and emptied the bowel, sutured and carefully washed it, and then accomplished reduction. The cow recovered, and eight months after operation was sold to a butcher, who found a large abscess in her side.

MENZIES (No. 28) was called to a sheep that had been injured by wool shears. The wound was six inches long. Rumen, omentum, and other viscera dragged on the ground. He excised the omentum, removed ingesta from rumen, and after cleansing sutured rumen with cotton thread, returned it to the abdomen. Recovery.

RODLOFF (No. 29), in reducing a hernia in a dog, accidentally incised the bladder. The wound was sutured, and the dog recovered.

THOMSON (No. 30) says that whilst castrating a pig, "the animal sprang up and the scalpel was plunged deep into the belly." After operation, Thomson saw fæces escape from the wound in the side. The greater part of the small bowel had to be drawn out before the wound in it was seen. The knife had divided the gut almost through, and wounded the mesentery. The gut and mesentery, nicely adjusted, were sewn together and replaced, the wound was sutured, and the pig soon recovered.

The foregoing cases by no means exhaust the list of recorded abdominal injuries in horses and cattle. Those given may serve to substantiate the contention that the horse is not specially susceptible to peritonitis from wounds of the abdomen.

LAPAROTOMY OR ABDOMINAL SECTION.—It is said that Henon (1800), professor at Lyons Veterinary School, frequently performed this operation, but particulars of his cases have not been published. In this country, laparotomy was performed on a mare by KING (No. 31), a veterinary surgeon of Stanmore, in 1829. The mare had been affected with abdominal pain for 13 days, during which time she had been bled, purged, and clystered without benefit. King secured the animal in the erect position, incised the left flank, introduced his hand and soon found a portion—about 12 inches—of the small intestine stuffed full and quite hard, and the gut in front of the obstruction full of fluid. He grasped the obstructed bowel, pressed it gently, and mixed its contents with the fluid. Having softened the mass in the bowel, he closed and dressed the wound in the flank. The mare died six hours after operation. Mr. King adds: "In such a case any attempt may be justifiable." Three years later, GAULLET (No. 32) operated on a moribund ass in which he had diagnosed obstruction of the pelvic flexure of the colon. He opened the flank, incised the gut—which was almost black—extracted a concretion, and closed the wounds with coarse sutures. The patient died in 24 hours. The next, and to this day the only successful laparotomy performed on a horse affected with intestinal obstruction, is that recorded by FELIZET (No. 33), of Elbœuf. In June, 1849, Félizet was called by a miller to see a horse, about nine years old, that had been affected with colic for about 16 hours. Two or three times within four months the horse had shown symptoms of constipation. Clysters had been given, but no other remedy. Rectal examination discovered a concretion, as large as a child's head, at the beginning of the floating colon. Félizet was positive of the existence of the calculus. As death seemed the only possible result, the miller was informed that his horse could not live much longer. But a conversation between Félizet and a farmer probably saved the animal's life. Five days before, the farmer's colt in jumping a hedge had opened the abdomen and torn the point of the cæcum. Félizet treated the wounds, but gave no hope of recovery. The farmer now told him that the colt had made wonderful progress; and on learning this, Félizet was struck with an idea as bold as it proved to be fortunate. At once he decided to return to his patient, the miller's horse, open the flank and extract the

calculus. Unaided by anæsthetics and antiseptics, he performed laparo-enterotomy. The horse was thrown on the left side; the upper hind leg, unhobbled, was drawn backwards, and lashed to a stout pole. The skin of the right flank was incised longitudinally, the muscles were divided with fore-finger and thumb, and the peritoneum was opened with the point of a bistoury. The left hand with fingers extended within the abdomen prevented protrusion of bowels, while the right hand in the rectum pushed the obstruction towards the flank. Acting together, the hands passed the tumour through the wound. The right hand was now withdrawn, and cleansed by an assistant. The distended bowel was gently wiped, and incised two fingers' breadth from the mesentery. To facilitate extraction the concretion was reduced by separating its fæcal crust. A furrier's suture was used for the wound in the gut, the muscles were stitched in layers, and a strong quilled suture closed the wound in the skin. Sweating profusely, the horse was allowed to rise. He was poulticed on the loins and bled six times at intervals of three hours, 21 pints altogether being withdrawn.

(*To be continued.*)

Legal News.

Contravention of Veterinary Surgeons Act.—At the Edinburgh Sheriff's Court, on July 23rd, William Johnston, blacksmith, Roslin, Mid-Lothian, appeared to answer a charge of having contravened a section of the Veterinary Surgeons Act of 1881, in so far as he, not being a fellow or member of the Royal College of Veterinary Surgeons, unlawfully implied that he was a member of the College by declaring and stating so in a certificate granted by him to the Employers' Accident and Live Stock Insurance Company, relative to the death of an animal, the property of Mr. James Slater, of Loanhead. Johnston admitted the charge, and Mr. Craigie, advocate, who appeared on his behalf, said that his client had considerable skill in dealing with horse diseases, and farmers in the district consulted him extensively. He had been asked to fill up a certificate of the death of a horse for an insurance company, and unfortunately he had inserted the word "Yes" where the question was asked "if he was a member of the College of Veterinary Surgeons." The respondent had done so without considering what he was doing, as he had no desire whatever to pretend to anybody that he was a member of the College. Questioned by the Sheriff, Mr. Craigie said that Johnston did not charge the farmers anything, although they sometimes gave him 2s. 6d. for his advice. There was no desire on the part of the respondent to make a profit in the matter, and he submitted that an admonition or the imposition of a small fine would meet the ends of justice.—Mr. Morison, advocate, who prosecuted, submitted that this was a case where a substantial fine should be inflicted. He appeared, he said, in the interests of the public. The Act was passed to give veterinary surgeons who had passed under the terms of the Act a certain status and qualification.—Sheriff Rutherfurd said he did not doubt that the respondent had acted in perfect *bona-fide* in granting the certificate, but at the same time he committed a great error in not scoring out these words—"I being a member of the Royal College of Veterinary Surgeons," and in adding the word "yes" where he was asked to state if he was a member of the College. However, he was of opinion that Johnston had acted in good faith, and he would impose a fine of 10s. with expenses, amounting to £2 2s.—The complaint was at the instance of Mr. Mackay (Macpherson and Mackay), with the consent and with the authority of the Council of the Royal College of Veterinary Surgeons. This is the first prosecution in Scotland under the Act of 1881.

Army Veterinary Department.

London Gazette, July 23rd.

Veterinary-Major C. W. Gillard is placed on temporary half-pay on account of ill-health. Dated 24th July, 1895.

Arrivals.—Veterinary-Captain G. H. Fenton arrived from India on six months' sick leave of absence.

We regret to announce the death of a very promising young officer, Veterinary-Lieutenant C. B. Freeman, who died of enteric fever on the 5th inst., while serving with the Chitral force. This officer received the diploma of the Royal College of Veterinary Surgeons on the 29th May, 1889; was appointed to the Army Veterinary Department 10th May, 1893, and embarked for India 13th September, 1894.

Veterinary-Major B. L. Glover will take veterinary charge of the horses in the East Square, East Rear Range, Garrison Staff, and Infantry Transport, at Woolwich, vice Veterinary-Lieutenant W. E. Russell. Veterinary-Major I. Matthews, Dublin, has been detailed to act as District Veterinary Officer for Ireland, in addition to his own duties, until a successor to the late Veterinary-Lieutenant-Colonel C. Phillips, has been appointed. Veterinary-Major S. Duff-Gillespie, in charge of the Station Veterinary Hospital at Kirkee, has been deputed to Ahmedabad on inspection duty.

Parliamentary Intelligence.

DOGS BILL.

In the House of Lords on Monday, 17th June.

Lord Carrington moved the second reading of this Bill, which, he said, was a non-contentious measure, intended to consolidate nine Acts of Parliament, passed from 1839 up to 1871. The Bill was required on account of the increase of rabies in some portions of England. There were 96 cases last year, and the cases had increased this year to 150. The reason, to a great extent, why the increase was so marked was on account of the number of stray dogs wandering about the country without any sort of control, and the difficulty of dealing with them. If a police officer had any reason to believe that a dog found in a highway was a stray dog, he might seize it. If no application was made for such dog, or no owner was known, after three days it might either be sold or destroyed. A police officer might destroy any dog found in a highway which he had reasonable ground for believing to be affected with rabies. That gave, all over the country, a power at present only in the hands of the Metropolitan police. He should be perfectly prepared to reconsider the words of the clause dealing with offences so as to make it clear that the Bill in no way interfered with sporting dogs.

Viscount Sidmouth supposed the police would have no power of interference in places of public resort.

Lord Carrington said the Bill was necessarily left rather vague so as not to hurt the susceptibilities of people who were dog fanciers and that class of persons.

The Duke of Argyll thought three days rather short notice for the murder of a favourite dog. He had known several instances of friends of his who had lost favourite dogs, more friends than animals, and had not been able to recover them for more than three days. Of course, there was the alternative of sale, but practically many dogs were unsaleable, and it was shocking that people should lose their favourite dogs if they could not recover them within three days.

Lord Carrington did not think there would be any objection to meeting the noble duke's wishes. The time was that allowed in the Metropolitan

Streets Act, but there would be no difficulty unless, indeed, on the ground of expense, in extending it to a week if necessary.

Lord Ashbourne thought that on the first clause there would be a good deal of anxiety and perturbation of mind as to the powers there given to the police as to what they should regard as stray dogs. He suggested that the interval of three days, after which a dog could be destroyed, was too short, and urged that there should be some advertisements published as to the places where stray dogs would be kept. He did not desire to interfere with the passing of the Bill, but he considered that it should be made as cautious and prudent in its working as possible.

The Bill was read a second time.

Extracts from Foreign Journals.

DETECTIVE INJECTIONS: (1) TUBERCULIN.

Tuberculin is an extract from cultivations of the bacillus of tuberculosis. After remaining six weeks in the stove at a temperature of 37° Centig. (= 98° Fahr.), the cultivations are sterilised at 110° (= 230° Fahr.), so as to kill all the bacilli which they contain; after that they are concentrated in the hot-bath to a tenth of their original volume, then filtered on "Chardin" paper. There is thus obtained a syrupy liquid of a dark-brown colour, exhaling that odour of flowers peculiar to cultivations of the tuberculous bacillus in glycerinised media. The broth which served for the cultivation contained five per cent. of glycerine: the tuberculin obtained after concentration and filtration contains 50 per cent.; this explains why it may be preserved almost indefinitely, if it be kept away from heat and light.

When injected in small doses under the skin of tuberculous animals, tuberculin produces a more or less considerable rise in their temperature, and this enables us to affirm the existence of the disease, however recent and limited the lesions may be. In the case of healthy animals—that is, non-tuberculous—no appreciable reaction is produced. The injection of tuberculin is always innocuous; performed on milch-cows it affects in no way either the quantity or the quality of the milk produced; it in no way interferes with gestation, even in the case of animals about to calve.

For ordinary use, tuberculin is employed diluted to the extent of one-tenth in carbolised water 5 per 1,000. The best plan is to inject at one time beneath the skin, behind the shoulder, 3 to 4 cubic centimetres of of the dilution (3 cubic cent. for cows of medium size, 3½ for large cows, 4 for bulls and high-class animals). The temperature of the animal must be taken before the injection, then every two hours, beginning at the tenth hour, until the twentieth hour after the injection. When time presses, the operator may content himself with taking the temperature thrice after the injection—namely, at the twelfth, fifteenth, and eighteenth hour; the *diagnostic reaction* is measured by the difference between the initial temperature and the highest temperature noted after the injection: if this difference exceeds 1°·5 Cent. (2°·7 Fahr.) it may be affirmed that the animal is tuberculous.

In practice it is usually desirable to make the injections about 6 p.m. The temperature of the suspected animals is taken next morning at 6 o'clock, 9 o'clock and noon. It may happen that the animal at the time of the proposed injection is feverish; this is caused often enough by hot weather, or by some passing irregularity in the digestive functions, but it is better in such cases to defer the operation. It is important also to remember that in very tuberculous cows, those especially which are phthisical in the proper sense of the word, the injection of tuberculin may produce no rise of temperature what-

soever, but there is no difficulty in such cases, the clinical diagnosis being always very easy.

DETECTIVE INJECTIONS: (2) MALLEIN.

Mallein is to glanders what tuberculin is to tuberculosis. Its mode of operation is identical ; after sterilisation of the cultivations in the autoclave* and concentration in the hot bath, the glanders-cultivations in glycerinised broth are filtered on "Chardin" paper ; we thus obtain "raw" mallein (*la malléine brute*), a syrupy liquid, of a dark-brown colour and somewhat fœtid odour. In practice, mallein is used diluted as 1 in 8 or 10 of carbolised water 5 p. 1,000.

In a glandered horse, the subcutaneous injection—at the neck or behind the shoulder—of a very small quantity of mallein ($\frac{1}{4}$ of a cubic centimetre of raw mallein, 2 cent. of mallein diluted 1 in 8, or $2\frac{1}{2}$ cent. of the dilution of 1 in 10), produces a characteristic reaction. In a few hours there forms at the place of injection a hot, inflammatory swelling, distended, very painful, always voluminous, sometimes enormous. From all sides of the tumour there radiate wavy lymphatic streaks, hot and painful when touched, stretching away towards the adjoining ganglions. When the mallein is aseptic and the injection made aseptically, this swelling never suppurates, but it increases in size during 24 to 36 hours and persists for several days ; then it gradually diminishes, very slowly, and finally disappears at the end of 8 or 10 days. With the growth of this swelling the general condition of the patient alters completely ; he becomes dull and dejected, the face becomes shrunken, the eye has an anxious look, the coat lustreless and staring, the flanks contracted, the respiration hurried ; the appetite seems to be suspended, frequent shudders are observed to pass through the muscles of the forelegs, sometimes even the trunk is subjected to violent convulsive shocks. If we bring the animal out of his stable we are struck with his wretched look, with his stupor, with his complete prostration. The most active horse, the most fractious, the most dangerous, is completely transformed ; he has become listless, indifferent to all his surroundings, quite tractable ; one may do with him as one likes.

These general phenomena constitute what we in France call the organic reaction ; they are not always so clearly marked ; one can observe great differences in their intensity according to the patient, but they are never completely absent. On the other hand, the *thermic* reaction never fails to show itself ; in a few hours the central temperature of the glandered horse gradually rises 1°·5, 2°, 2°·5, and even more above the normal. The rise in temperature, noticeable even about the eighth hour after the injection, persists for a long time ; it attains its maximum between the tenth and the twelfth hour, occasionally not till the fifteenth, and more rarely about the eighteenth hour. An important fact to note is that the phenomena called forth in glandered horses by the injection of mallein persist for a long time ; after 24, 36, and even 48 hours, prostration still exists, and the temperature remains more than one degree above the normal. In practice it is advisable to take the temperature of the suspected animal before the injection of the mallein, then every two hours, beginning at the eighth and going on to the twentieth hour after the injection, but it may be sufficient to take the temperature four times, viz., 9, 12, 15, and 18 hours after injection.

In the case of healthy horses, on the contrary, the injection of mallein, even in a much larger dose, remains without effect ; the temperature remains normal, the general condition is not affected ; there is produced at the point of injection a little œdematous swelling, somewhat hot and painful to the touch, but the œdema, instead of increasing, diminishes rapidly, and disappears in less than 24 hours.

* Autoclave, a pot for cooking, with a tight-fitting lid to prevent evaporation.

The reaction called forth by the injection of mallein is quite specific; when it shows itself it enables us to state at once and with certainty that glanders-lesions exist, even when they are quite minute; when the reaction does not take place we may be sure that the animal experimented on is not glandered, whatever be the appearance of the suspected lesions. But the use of mallein can give really useful indications only when, and as far as, we can remove the causes of error that have been pointed out to us by experience. For example, it would be imprudent to employ mallein in the case of animals already fevered; the thermometric indications might be thereby falsified so far as to bring out wrong conclusions. Again, all animals subjected to the treatment must be removed as far as possible from atmospheric variations and the influence of strong sun-heat, fog, rain, wind, etc. If it be true that the majority of horses are unsusceptible, or nearly so, to these influences, there are still some which are susceptible, and suffer therefrom, apart from all other causes, variations of temperature amounting to 1°·5, 2° and even more; we should thus be exposing ourselves to the risk of serious error if we injected mallein into horses exposed to atmospheric rigours, especially if we confined our observations to thermometric indications. Lastly, it must not be forgotten that certain diseases—strangles, for instance—produce frequently great daily variations in the temperature of patients; therefore when we have reason to believe ourselves in presence of a disease of this kind we must make sure that the increase of temperature consequent on injection of mallein is persistent, and that the organic reaction is clearly present.

The question arises whether animals found by the help of mallein to be glandered ought to be immediately slaughtered? I say no; the experience of the last few years goes to prove that amongst these animals there are some which, when removed from the infected centre and thereby withdrawn from all chance of new contamination, recover from the glanderous pulmonary lesions, the existence of which had been revealed by the mallein. We ought therefore to confine ourselves to the destruction of those which, *in addition to* the reaction, present some clinical indication of the disease, such as ulceration of the nose, indurated glands, suppurative lymphangitis, sarcocele, etc. The others must simply be removed from amongst the healthy animals and subjected from time to time—say every two months—to the mallein test. If any of these should eventually show the clinical signs of glanders they ought to be slaughtered at once; on the other hand, those animals which have stood two successive doses of mallein without reacting ought to be considered definitely cured, restored to their places, and put at the free disposal of their owners.—*M. Ed. Nocard* in the *Recueil de Médécine Vétérinaire.*

STRICTURE OF THE URETHRA AND CROUPOUS CYSTITIS.

A VETERINARY surgeon was called in to examine a horse that had become emaciated, and whose temperature had risen to 40° cent. (103·5 Fahr.). The sheath was swollen and hot, and the end of the penis, which projected therefrom, was in the same condition, but could not be pulled out any farther. Inside of the sheath a large swelling, twice the size of one's fist, could be felt, and in front of this was a strangulation of the penis. The urinary bladder, as could be felt per rectum, was tightly stretched, and micturition was no longer possible. No course was open but to amputate the penis. The horse was cast and chloroformed, and the penis drawn forward as far as was necessary. In doing this the strangulation was found five centimetres (two inches) above the glans and farther up was the swelling. The urethra was opened a little farther upwards, and the surgeon succeeded, by pressure applied to the rectum, in emptying the bladder of its contents—a pulpy mass

with croupous shreds. It was discovered, also through the rectum, that the wall of the bladder was thickened: one felt a kind of *sandy* sensation between the fingers. The case was clearly one of croupous cystitis. The end of the penis, as far as the urethra had been slit up, was cut off—of course after ligature—and the bladder was syringed. The symptoms of acute cystitis persisted for some fourteen days, but otherwise the case went favourably. The amputated part of the penis was 20 centimetres (about 8 inches) long. The swelling was very hard, and contained a cavity with a wall of the thickness of a finger and sunken contents, whence a canal led to the injured urethra. The cause of the trouble could not be discovered.—*Schweizer Archiv. für Thierheilkunde.*

EXCISION OF THE CLITORIS.

In an interesting article contributed to the *Recueil de Médécine Vétérinaire*, Mr. P. I. Cadiot, of Alfort, writes as follows, with reference to the case quoted in our July number:—"Observations published by writers who have performed removal of the ovaries, in order to counteract nymphomania in the mare and in the cow, may be classed in three groups, if we consider them from the point of view of the therapeutic results. In a certain number of cases the cure has been complete, in others there has been only an improvement more or less pronounced, and in a third class the genesic troubles, the morbid irritability, the tendency to kick and bite have persisted without any modification worth noting. After collating my facts, gathered since 1888, I find that the figures are about equal for all these categories, that is, about one-third of cures, one-third improvements, and one-third failures.

Since the therapeutic treatment became simplified, ovariotomy of the females of our larger domestic animals has come to be an operation within the reach of all practitioners, and asepsia enables us to avoid the infectious complications which used to cause a great mortality. Yet one hesitates to propose the operation for fear of a therapeutic failure. It is certain that the operation may fail when the troubles which we wish to combat have really their source in the genital apparatus. This explains why Delafond has made trials of cauterisation and excision of the clitoris in the case of "hysterical" mares and cows. M. Weber tells me that he formerly performed removal of the ovaries and clitoris, but without the slightest benefit. Abroad the operation has been performed by several surgeons with varying results, but no more than with us in France has the operation been mentioned in special works. In a great number of our castrated females the persistence of nymphomania, with all its characteristics and all its troubles, is connected with a variety of causes, but I am inclined to think that very often the clitoris plays a principal part in this persistence. In support of this idea I might cite examples and facts taken from human pathology. I will mention only the well-known fact that women who have undergone ovariotomy have still sexual feeling. If in the absence of the ovaries the clitoris can preserve its functional attributes—its excitability or its physiological irritability—it may quite well, under the same conditions, be the seat of hyperexcitability or morbid irritability, and for the females of our larger domestic animals affected with nymphomania the chances of therapeutic success in a surgical operation are more numerous when both clitoris and ovaries are removed than when only the latter are removed.

Some facts have been published which go to show that even the simple removal or destruction of the clitoris has dispelled the troubles connected with nymphomania. Here is one from my own practice. Some months ago a client sent me a mare that for some time back had been almost unapproachable, and quite unfit for service, and asked me to castrate her. The following

day I performed excision of the clitoris. I don't know how the case will ultimately turn out, but I can say that from the fourth day after the operation onward, everybody was astonished at the change in the character of the animal. To sum up, I am of opinion that excision of the clitoris, performed along with castration, will increase the number of successes in the surgical treatment of nymphomania. And, seeing that the simple removal of the clitoris has given some cures, it may be worth while for some of our *confrères* to try it who do not practise ovariotomy.

The operation is one of the simplest. Excision is preferable to destruction with the hot iron. There is no need to cast the mare, and, of course, still less to chloroform her. Let her be held, as she stands, with two shackles and a noose, with or without the frame; these, and a twitch on the upper lip, will suffice. Two separators, or two forceps pincers, applied to the labia of the vulva and drawn by the assistant, expose the clitoris; two other pincers seizing the lower commissure and the mucous fold above the clitoris assist matters considerably. The clitoris is seized, its periphery marked out by two curving incisions which divide the mucous membrane; then, with the bistouri or the scissors, the body is isolated and cut through near its base. The slight hæmorrhage which takes place may be stopped by passing the hot iron over the sides of the wound.

PROGNOSIS AND DIAGNOSIS BY SMELL.

At a recent meeting of the *Société Centrale de Médécine Vétérinaire*, M. Weber asked leave to read a letter from a professional friend on the above subject, and prefaced it by the following remarks:—"Certain clinical experts consider, as I do, that it is very important for the practitioner to be acquainted with all the signs that can guide him in the prognosis and diagnosis of disease, even when these signs or indications are based only on smells. The facts narrated by my correspondent appear to be of very great value in this direction." The letter ran as follows:—"Everybody knows what valuable indications surgeons find in the odours exhaled by their patients; the apple-smell, the mouse-smell, and all the other various and characteristic fœtid odours. Amongst these symptomatic odours, M. Bissauge specially mentions the garlic-smell, characteristic of phosphorated hydrogen. I think he is right, and I wish to take you back with me thirty years, and point out to you, by reference to an experience of mine, the prognostic and diagnostic value of this particular odour, which is, in my opinion, an infallible indication in the case of cattle. About the year 1863 I was requested to treat a cow that was suffering from a severe attack of enteritis. A colleague, M. E. Fréminet, was called in to consult with me, and it was he who caused me to remark the very pronounced smell of garlic exhaling from the mouth of the patient, and he added that this sign never failed in grave cases of gastro-enteritis in the cow, and that when the smell was very distinctly noticeable, and especially when exaggerated, the prognosis was always very grave. I cannot remember having seen any mention of this symptom of enteritis and of gastro-enteritis of the greater ruminants, nor have I myself ever observed the symptoms among the smaller ruminants, although I have sometimes found cases of the disease amongst them. Since the above-mentioned case, I have treated a great number of cows for enteritis, and have always noticed this characteristic symptom.

"When a surgeon is called in at the beginning of a case of gastro-enteritis and there is as yet only slight and intermittent tympanitis, and the animal has no violent colic attacks, and the excreta are not yet hard, provided the garlic-odour do not exist or be scarcely noticeable, the surgeon may give a favourable prognosis and bring about a rapid cure by attention to diet, by white

drenches and a decoction of linseed mixed with a third part of infusion of balm-mint and perhaps a little sulphate of soda added. But if the garlic-smell be very marked, the inflation pronounced and constant, if there be constant moaning, with trembling and feverishness, then the prognosis is serious, for the recovery—if it take place at all—will be slow, and it will be obtained only by the administration, at the very commencement of the attack, of chlorhydric acid (10 grammes for 100 grammes of alcohol in 2 litres of infusion of balm-mint), severe diet, white drenches, and, from the third day onward, aloes (25 grammes) mixed with ipecacuanha (15 grammes).

"I would only add that if smells are important elements of diagnosis, they are at least equally reliable as helps to prognosis.—Yours faithfully, EMILE THIERRY."

Notes and News from Foreign Journals.

STRANGE CARDIAC DEFECT.—Veterinary-Surgeon Zundel reports a curious case of a nine-months-old bullock which the owner was obliged to slaughter. The animal, in spite of having a good appetite, had never thriven and had latterly been subject to sudden attacks of giddiness. The heart when examined after death was found to be very heavy and externally showed no peculiarity, but on further investigation Zundel found that the septum was entirely wanting; the whole inside of the organ formed a single chamber. The valve was quite normal.—*Berliner Thierärztliche Wochenschrift.*

ALOPECIA IN A CALF.—A five-weeks-old calf, already weaned, which had at its birth been covered with the normal quantity of hair, became in eight days completely hairless and bare, with the exception of a few small spots on the back, legs, tail, and ears. Even on these places the hair was very loose and could be easily pulled off. In spite of this the animal was quite lively, did not shiver and had a good appetite. The owner had it covered with a blanket and rubbed with an ointment consisting of 150 grs. ($5\frac{1}{4}$ ozs. av.) of swine-fat, 40 grs. tincture of cantharides and 5 grs. creolin, in doing which the body was treated in ten different sections. After fourteen days of this treatment the first reddish-grey "down" appeared, almost like that of young goslings, and after some six or eight weeks the calf was practically restored to normal condition as regards hair—which, by the way, was of its original light-brown colour.—*ibid.*

ACTINOMYCOSIS OF THE TONGUE IN A HORSE.—Veterinary-surgeon Gruber reports a case of a horse, 14 years old, which began to let his tongue hang out of his mouth and to slaver continually. He could take only liquid nourishment. The tongue was double its normal thickness and showed a number of roundish swellings, some as big as hazel-nuts; these swellings were to be found also in the lips, cheeks and nostrils. The animal was slaughtered, and it was clearly shown that he had been suffering from actinomycosis.—*ibid.*

AMPUTATION OF THE PENIS IN A DOG.—A one-year-old pointer, in consequence of congenital atrophy of the sheath, had its penis exposed for a length of some 6 or 7 centimetres (about $2\frac{1}{2}$ inches). As this affection made the dog useless for sport or breeding, several attempts were made to remove it, but all were ineffectual. It was then decided to amputate all that portion of the penis which remained outside the sheath. For this purpose an elastic ligature was placed above the point at which the amputation was to be made, and the operation was performed with the help of a bistoury and a small saw. There was no bleeding, and the contraction of the urethra, which usually follows this operation, did not take place. The recovery was very rapid.—*Progrès Vétérinaire.*

CHLORINE POISONING.—Veterinary-Surgeon Schultz reports a curious case.

A horse was behaving frantically—at one moment trying to place its feet in the manger, or on the wall of its stable ; at another, lying flat on the ground and stretching out its fore-feet, whilst the hind-feet remained passive ; then it crouched like a dog, sprang up, placed its fore-feet crosswise, thrust its head under its body, then tried, by twisting its neck, to touch its back with its head, and screamed several times. Mr. Schultz succeeded in injecting morphia, and then the animal became quieter, but sweated heavily. An injection of 1½ grains of eserine produced copious defecation. After a few hours the symptoms disappeared, and there was no return. Next day the cause of the disturbance was discovered—grass and hay had been given to the horse, taken from a meadow which had been let as a bleachfield, and on which a good deal of chlorine had been sprinkled in the course of bleaching operations.—*Wochenschr. für Thierheilkunde.*

Honour to Veterinary Surgeons.—We are glad to see from the *Recueil de Méd. Vét.* that M. Chauveau, Inspector of Veterinary Schools in France, has been created Commander of the Legion of Honour, having been *Officier* since July, 1880. Six French veterinary surgeons have been raised to the dignity of *Chevaliers du Mérite Agricole.*

Notes and News.

At a meeting of the Council of the Royal College of Veterinary Surgeons held on Tuesday, July 2nd, Mr. James F. Simpson, F.R.C.V.S., of Maidenhead, was unanimously elected President for the ensuing year. Mr. Simpson is a well-known veterinary practitioner at Maidenhead, of which town he is a Justice of the Peace, and he served the office of Mayor in 1893.

Canine Sagacity.—The pretty village of West Stafford, a few miles from Weymouth, has a dog story which shows the great sagacity of certain members of the canine family. The South-Western Railway intersects Mr. Smith's farm, between Dorchester and Moreton, and the trains between these two stations are usually run there at full speed. Some three-quarters of a mile from the house rises a high embankment where the line crosses the valley, and about nine years ago Mr. Smith arranged to have his daily journal thrown by the guard as the train passes this particular spot. "Pompey," a spaniel, took a daily walk for some time with his master to pick up the paper. The dog was not long in grasping the purport of this daily walk, and after a time he began to be despatched alone. In time he became so habituated to the work (says *Black and White*) that for the last two or three years he has required no order, but has left of his own accord at the exact time. He trots along the lanes and across the meadows, quietly waits by the side of the line till the train dashes past, when he is instantly on the alert, ofttimes trying to catch the paper in his mouth as it falls from the hand of the guard. On securing the object of his quest, the animal at once makes for the house. When he reaches home he delivers the journal and is rewarded with his daily meal.

Information reaches me from Brussels that the Belgian Government is reconsidering the order issued in November last prohibiting the importation of Canadian cattle. It will be remembered that the lungs of the suspected animals were submitted to Professor Nocard, the eminent Continental pathologist, and that he was not able to say that the disease was pleuro-pneumonia. In addition to this important information in favour of the Canadian contention that the disease does not exist in Canada, there is also the fact that there have been no outbreaks in the Dominion ; and, besides, it is well known that the Belgian consular authorities have been making exhaustive inquiries into the matter in Canada on behalf of the Government they represent. Although

no official information is actually forthcoming on the subject, it is generally understood that it is the intention to permit some experimental shipments to be made from Canadian to Belgian ports. The animals will not be slaughtered at the port of landing, but will be taken, under supervision, to various destinations, and then slaughtered under the auspices of the Government veterinary authorities. The impression prevails that if the experimental shipments turn out satisfactorily it will result in the existing embargo on the importation being entirely removed. The hope is being generally expressed in Canada that the new Government will shortly take up the question of the Canadian cattle trade, and it is felt that this can be done with greater chances of success than would have been possible had Mr. Chaplin been appointed President of the Board of Agriculture, as he has expressed himself so strongly on the subject, paying more attention, however, to its political than to its pathological aspect. Canadians feel that they have a serious grievance in the matter, in so far that the country has been scheduled on account of a suspicion that pleuro-pneumonia exists in the country. It is nearly three years now, however, since the difficulty arose, and not only have there been no outbreaks, but there has not been even a suspicious case. The Canadian Government has done everything that was possible to investigate the matter, and the lungs of the animals slaughtered in the chief centres in the Dominion for a period of one month were examined by veterinary authorities. If the disease had obtained a footing in Canada, it must have been discovered with such a severe test. In any case, however, it is recognised that nothing more can be done to prove that the flocks and herds of Canada are free from the dread disease.—*Scotsman.*

In our issue of June 29th, and under the heading "Advertising Extraordinary," we directed attention to the methods followed by the "Star" Veterinary Medicine Manufacturing Company in obtaining orders, and in our issue of July 6th we referred to a letter we had received "from Mr. Gray, who describes himself as principal consulting veterinary surgeon to the company." Mr. Gray has since called upon us to protest against this use of his name, and he has requested us to publish the subjoined letter:—

33, Langham Road, West Green, N.,
July 13th, 1895.

Sir,—I have seen in your issue of June 20th, reference to a letter which purports to have been written by me on behalf of the "Star" Veterinary Medicine Manufacturing Company.

I beg to say that this letter was not written by me, or with my knowledge or authority. At the present time I have no connection whatever with the company, and I have never had any beyond a six months' agreement as consulting veterinary surgeon—an agreement that expired two years ago, when the company undertook that my name should be withdrawn from their circulars and pamphlets.—Your obedient servant,

Charles Gray, M.R.C.V.S.

We can only say upon this that the letter we received purported to be written by Mr. Gray on behalf of the company, and that on printed matter which was sent to us with the letter Mr. Gray's name figures prominently. He now tells us that he never had any connection with the company other than a six months' agreement as consulting surgeon—an agreement which expired two years ago; that it was a part of the understanding then arrived at that his name should not be used by the company, and that the letter sent to us in his name is an impudent imposition. That being the case, Mr. Gray will no doubt instruct his solicitors to take the necessary steps against the company Meantime the question suggests itself—what is the value of the testimonials upon which the company relies in proof of its claim that its medicines are of first-rate quality? If the company is capable of using another man's name without his authority, it is capable of manipulating testimonials. We do not say that it has manipulated them, but if the company is worked on respectable lines it will be quick to answer Mr. Gray's disclaimer. And who are the

company? We are told that they are Messrs. E. Jacobs and Son, who some time ago were carrying on business in Houndsditch, and that Messrs. E. Jacobs and Son are neither chemists nor veterinary surgeons.—*To-day.*

Correspondence.

EDINBURGH,
July 10*th*, 1895.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—I shall be obliged if you will allow me, through the medium of the JOURNAL, to draw the attention of the profession to the subjoined partial report of a meeting of the Town Council of Edinburgh, which I have cut from to-day's *Scotsman*, and specially to that portion of it where reference is made to what, in the words of our speaker, was termed "Canvassing for Work."

The Dick College.

Under recommit, the Lord Provost's Committee recommended approval of the conditions of management of the Royal (Dick) Veterinary College as amended. The Lord Provost made an explanation of the rearrangement of the affairs of the College which had been made since the death of the late Principal, the chief of which were the establishment of a fee fund, the regulation of the duties and responsibilities of the Professors and Lecturers, the establishment of a sinking fund to pay off the debt, the allocation of the salaries of Professors and Lecturers, and arrangements for the distribution of the surplus.

Attention was called to the fact that Professor Dewar had only a salary of £350, and it was asked by Mr. Waterston if this was owing to the fact that there was an understanding that he should be appointed Inspector of Byres?

The Lord Provost said the Council was in no way committed to appoint Professor Dewar Inspector of Byres, though he was *ad interim* discharging the duties and doing them well.

Mr. Brown challenged that statement, and said they would have something to say on the point when it came up.

Mr. Mitchell Thomson asked if the trustees of the Dick College were understood to sanction the Professor's canvassing for work.

The Lord Provost replied in effect that the Trustees did not sanction it, but that they did not object to the Professors bringing the veterinary and the forge business under their friends' notice. If any of the Professors had asked any of the Councillors to send their horses to the College to be shod, where was the harm? Business was greatly pushed now-a-days.

Mr. Telfer asked if this was to be considered a municipalisation of horse-shoeing? (Laughter)

Principal Williams, as a member of the Council, entered his protest against their approving of this system of canvassing for work by the Professors of the Dick College. It was against the dignity of the profession.

The recommendations of the committee were then agreed to—the Lord Provost remarking that they could give them a year's trial at any rate.

Those of your readers who take an interest in things outside of your ordinary articles, might have noticed that at the last annual meeting of the Royal College of Veterinary Surgeons I drew attention to this very subject. I did so for the purpose of eliciting, if possible, some authoritative opinion as to how far one might go without laying himself open to a breach of clause 6 of the Veterinary Surgeons Act of 1881. I said, referring to the fact that the annual report stated that 33 complaints against members of the college or registered practitioners for "unprofessional advertising" had been dealt with, "this phrase was one of those beautifully ambiguous ones for which the Royal College was celebrated. What was meant by unprofessional advertising? In my ignorance I had always thought that all advertising was unprofessional. If there was such a thing as unprofessional advertising, it logically followed that there was some kind of advertising which was

professional! What was professional and what was unprofessional advertising? Would the council who were responsible for the report, be good enough to say. If the council meant that a young man having just passed, and was in this position that he must make his living, and to this end, that he may or may not circulate a business card, why did they not plainly say so? If on the other hand the council considered that practitioners might or might not advertise in the columns of newspapers and among the lists of horse sales, &c., that they were this, and that, and the other thing, then why did not the council say so also? They must not deal in ambiguities. There was, however, a worse offence in his opinion than advertising, there was solicitation of other people's clients, and that offence he was sorry to say was to his knowledge becoming quite common."

No one else in the room took the matter up. I am just a little afraid the subject was just a little delicate, and all the reply I got from the council through its late president was that it was better to leave the question indefinite, and that he thought there was a considerable amount of virtue in mystery, that there was nothing more impressive than mystery, and so let us leave this matter as mysterious as an Act of Parliament can make it.

That is not my opinion, however; and I submit, Sir, it was no answer to a well-founded complaint. I think the time and opportunity has come when those members of the profession who can honestly do so, should speak their minds freely on the subject.

Personally, I do think there is some excuse for a young, struggling man, issuing notice or even advertising his intention to commence practice, and where he may be found; but I consider it bad form to add to his name a string of letters which he very well knows are worthless so far as they are a guarantee of his professional position is concerned (they help to gull the public by making believe), and still worse form for an established practitioner to advertise the performance of certain operations, &c., &c., the sort of thing Master Gelder Giles or Farmer Myles, and all that sort of fraternity do; but hardly the thing for a member of a profession which has aspirations, but of which, knowing the practices common to some of its members, it is sickening to hear of what is called its "great advancement in the professional and social scale." Social elevation, it is called. What humbug, what rubbish. Where is the social elevation? Ask the rank and file for an answer. Granting, however, for argument sake, that some advertising is permissible, is there any excuse—any defence—for solicitation by a member of the profession of his professional brothers' clients?—save the word "brother"—more humbug; worse hypocrisy. I look upon this practice as the very meanest and most contemptible a man can be guilty of. Certainly it is common in trade. Tradesmen live largely by canvassing. But I ask, is it looked upon as permissible by any profession or professional man, which, or who, values its or their professional status and the desirability of observing professional etiquette? I am amazed that there should be found among the Town Council of Edinburgh gentlemen who could see their way to defend, to palliate, the practice in the instance giving rise to the discussion. Can anyone imagine the illustrious founder of the institution in question, himself a member of the Town Council, descending to such a thing? No. William Dick did not attain his eminence nor his extensive clientele by such methods. I can only account for what I would call the town council's weakness by the fact that a number of them are engaged in commercial pursuits, and naturally view this sort of thing with a more lenient eye than an equal number of members of the professions would.

All the more reason, say I, for the veterinary profession itself speaking its mind, let us have it out, and let us understand each other. If advertising and solicitation are to be considered quite the thing to do, let us agree upon it or otherwise; and if they are not, let us arrive at some conclusion as to how far

the profession is prepared to go, on saying what they are. If they are offences are they in a professional sense disgraceful ones ?

Personally I am not aware that any amount of advertising, canvassing, or solicitation has ever hurt me, nor do I think it ever will. Some of my professional brethren have had a fair trial at it, and I am happy and pleased to be in a position which enables me to invite them to keep up the fun. It is not so with everyone, however ; one hears from many quarters all over the country how widespread and pernicious both practices are becoming, how by causing unhealthy competition, they have been the means of lowering the earning capacity of the profession, how in spite of veterinary medical societies, they have been the means of creating distrust, dissension, and dislike among their members, and one can well imagine how injurious in the eyes of a discerning public they must be—to what little status the profession has attained, if they are not suppressed.

Once again, then, I say, let the profession speak out ; it has grumbled about the thing long enough ; let us have its mind now, and let the result, if condemnatory, be communicated in no uncertain terms to its representatives in council, and further I would suggest, let the profession send no man there who is not prepared to take up a very firm attitude on the question. No man who would find excuses either for advertising of certain kinds, or for solicitation, would get my vote, the man who will pledge himself to do all in his power to suppress them, will get it on this basis. Will the profession take the matter up.—Yours very sincerely, R. Rutherford, F.R.C.V.S.

LIABILITY FOR ACCIDENTS.

July 19th, 1895.

To the Editor of the Veterinary Journal.

Sir,—I should like to ask through the medium of the Veterinary Journal what a veterinary surgeon's position is, supposing an accident happens to anyone assisting him ? I had recently occasion to cast a big cart-mare at a farm, four labourers assisting me. While the animal lay struggling on the ground the hobble chain broke near the end, the hobbles flew off and one of them struck the man who was holding the mare's head in the face and stretched him senseless on the ground. I at first thought that the poor fellow was killed, but it fortunately turned out that he was not badly hurt. The chain was a comparatively new one, but it certainly contained a faulty link ; supposing that by an evil chance the man had been killed or seriously injured, could damages have been recovered from me ? I think that this is a matter of considerable importance, and I should very much like to hear the opinion of some of your readers on the point.—Yours truly, M.R.C.V.S.

EDITORIAL NOTE.

Owing to pressure on our space this month, we are unable to print several important communications. We hope to produce these in our September number.

Communications, Books, Journals, etc., Received.

Midland Counties Veterinary Medical Association ; E. Wallis Hoare, F.R.C.V.S. ; The Journal of Comparative Medicine and Veterinary Archives ; Abdominal Surgery, by Professor J. Macqueen, F.R.C.V.S. ; Henry J. Dawes, Esq. ; Bulletin of the Johns Hopkins Hospital ; Agriculture Journal of the Department of Agriculture, Cape Colony ; The Meat Trade of Austria ; The Medical Magazine ; The North British Agriculturist, Summer Number ; "Recueil de Médécine Vétérinaire" ; Joshua A. Nunn, Esq. ; etc., R. Rutherford, Esq., F.R.C.V.S. ; Dr. Arthur Sansom ; American Veterinary Review ; Fifth Report of the Royal Commission on Horse Breeding ; The Johns Hopkins Hospital Reports.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

SEPTEMBER, 1895.

THE EARLY DAYS OF ANÆSTHETICS IN VETERINARY SURGERY—A RETROSPECT.

(*Continued from page* 36.)

BY E. WALLIS HOARE, F.R.C.V.S., CORK.

FROM the year 1848 to 1850 we find little or no records of the employment of chloroform in the pages of the *Veterinarian*.

Cases are, however, recorded in July, 1850, by Mr. Glover, of York, and by Mr. Stanley in September, 1850.

In January, 1857, under the heading of "Crimean Reminiscences," an anonymous correspondent records an operation for the removal of a large scirrhus growth from the scrotal region of a stallion pony, performed under chloroform. This operator speaks highly of the benefits of the anæsthetic, and advises slow administration and a liberal supply of air.

From this date we find but little reference to the subject of chloroform on consulting the index of the *Veterinarian*.

A good deal of attention was directed to the subject of local anæsthesia by the use of the æther spray, but the results did not appear to have been satisfactory.

On consulting the volumes of the VETERINARY JOURNAL, the first of which appeared in July, 1875, we find that its worthy founder and editor on every opportunity urged the advantages of anæsthetics in veterinary surgery. During his long and honourable connection with this JOURNAL, Dr. G. Fleming always put forward the claims of the lower animals and their merciful treatment by man, not only in theory, but also in practice, and the advocates for the humane treatment of animals must ever keep in remembrance his worthy and laudable efforts in this direction.

We have completed our retrospect on the subject of

anæsthetics, but can we conscientiously state that our knowledge has increased in the present day as compared with the past? No doubt from time to time practitioners have paid special attention to the subject, and demonstrated the safety and utility of chloroform and æther in veterinary surgery, but it is absurd to imagine or to state that their use is general in the present day.

The most painful operations are still performed without any anæsthetic, and the most trivial objections are put forward by those who either from ignorance or prejudice disregard the sufferings of their patients.

Can we imagine anything more abominable than the operations performed for quittor in the horse, without the use of an anæsthetic? Here the most sensitive portion of the body is subjected to the knife and the cautery, or the horny laminæ separated from the sensitive foot, the pain manifested by the patient being positively sickening to anyone endowed with the ordinary dictates of humanity.

And let us inquire what little extra trouble and expense it would require to place this patient under the influence of chloroform. Take at the most four ounces of methylated chloroform at the rate of 2s. 4d. per pound, for the entire operation; the time expended does not merit consideration; and as to the risk of fatal consequences, we still await statistics of even a single accident, where the drug is administered in a common-sense manner with a proper supply of air.

Of course, if a horse is semi-asphyxiated by an improper apparatus, and, in addition, large quantities of the drug are administered, we cannot be surprised if now and then death occurs, or, what is far more common, a serious state of narcosis is induced, which necessitates prompt measures, in order to bring back the patient to consciousness.

Those who have experimented largely with chloroform in horses, know full well the marked resistance that some of these animals possess to the toxic effects of this drug.

But other horses are affected in a far different manner, and show serious symptoms of asphyxia if an excess of the drug be administered without a due proportion of air.

The chief error that administrators fall into is the giving of large doses at one time, and the irrational idea that it is necessary to semi-asphyxiate the horse before anæsthesia can be produced.

Practical experience demonstrates that the administration should be gradual, and that a proper supply of pure air should be allowed. Death as the result of a toxic dose of chloroform

in the horse, is always due to asphyxia slowly induced, thus differing from dogs and human beings, in whom it sometimes happens that in the early stages of administration a condition of *neuro-paralysis* occurs, signifying sudden failure of circulation and respiration.

Speaking from practical experience, I can state that since adopting the Improved Chloroform Inhaler, made by Messrs. Krohne and Sesemann, I have not had the slightest difficulty or anxiety in inducing anæsthesia.

This experience extends to animals of all ages and for all operations, and I cannot record a single case where any serious symptoms occurred.

The time and amount of the drug are reduced to a minimum, and the operator has perfect control over the administration, so that an excessive amount cannot possibly be given.

It is with pleasure that I am enabled to draw attention to the marked favour which the owners of horses display towards the use of anæsthetics. In every instance they express their entire satisfaction with the results, indeed, in some instances, they will insist on the employment of chloroform.

But this is only as it should be; people would refuse to allow painful operations to be performed on themselves without an anæsthetic being employed, then why should not they have a similar regard for their animals?

It is not because many veterinary surgeons, either from prejudice, ignorance, or in order to save themselves a little extra trouble, will be satisfied to operate on animals and subject them to severe and prolonged pain, that the owners of these animals will tamely submit to such treatment.

Let them once see an operation performed under chloroform and it will be useless for those so-called practical men who boast so frequently of the expeditious manner in which they perform operations, to persuade them that anæsthetics are eitheir useless or dangerous.

We do not hear human surgeons boasting in public places of their skill and expeditiousness in performing operations. But such occurrences are frequent in the veterinary world, whenever the subject of chloroform happens to be mentioned.

Such men, it is hardly necessary to mention, are usually rigid economisers of truth, and talk in a sarcastic manner of a subject on which they are ignorant. But boasting and ignorance always go hand in hand, and prejudice is a frequent companion of both. We look forward to the day when the

use of anæsthetics will become as general in veterinary as in human surgery, and when the owners of animals will demand their employment as a right.

In conclusion, I would wish to draw attention to an excellent and instructive paper on "The Chloroform Question," by Dr. Lauder Brunton, which is now appearing in the *Lancet*. It will well repay perusal by all practitioners who are interested in the subject, as it embodies all that is known by the highest authorities on the question of chloroform, from both experimental and clinical sources.

ESSAY ON ANÆSTHESIA.*

BY MR. T. R. MULCAHY.

(*Continued from page* 32.)

Chloroform is chemically trichloromethane, and belongs to a series of products obtained from marsh gas, by substituting a molicule of chlorine for one of hydrogen, all of which have anæsthetic properties. The methylated form is most used in veterinary practice on account of its cheapness, and answers the purpose just as well.

The susceptibility of individuals, even of the same species, varies so much, that it is most important that the administrator be able to identify the different phenomena that may appear during the inhibition of the drug. The principal action of general anæsthetics, as before stated, is on the central nervous system, and it is divided into three stages. The higher centres are first acted on, and upon this depends the safety of these drugs.

First Stage.—This may be called one of stimulation, and it will be observed that the first effect of chloroform and its congeners is always one of stimulation. The cells of the cerebral convolutions are first acted on.

Stimulation of these cells causes excitement, but accompanied with more or less confusion. In the human subject the senses are at first exalted, but speedily become dulled. This is not so easily recognised in animals, but may be identified in the dog by the animal uttering sharp yelps of a delirious character.

Muscular stimulation is also induced; this is of shorter duration in the case of chloroform than of ether, and is attributed partly to the actions of the drug on the convolutions, and partly to stimulation of the muscular centres.

It may be diminished by the previous injection of morphia.

* Read before the Edinburgh Veterinary Medical Society.

It must be remembered, however, that morphia depresses the heart and also prolongs narcosis.

Consciousness gradually becomes diminished, respiration is quickened, but the act is not so powerfully performed. The pulse also becomes more rapid, and perspiration may break out over the body; this, however, may be present from the first, if the animal has been cast.

The sympathetic is stimulated and the pupil dilates slightly. As chloroform first stimulates and then depresses, and as it acts first on the higher centres, the centres in the cerebrum are depressed, while those in the medulla are being stimulated. Hence we notice acceleration of the pulse and respirations with diminished consciousness.

Second Stage.—This is one of depression and goes on to arrest of function. Consciousness ceases and the patient seems to be in a heavy stupor. Ordinary methods fail to produce reflex stimulation.

The paniculus in the horse no longer responds to the touch of the hand. The reflex and so-called automatic excitability of the cord and medulla become depressed, and hence the parts governed are disordered. The voluntary muscles become relaxed, but the pregnant uterus still continues to contract. This circumstance adds to the value of these agents during painful parturition. It may here be added that chloroform will often cause relaxation of the "os uteri" when all other methods have failed.

The pupil contracts gradually and fully, due to depression of the sympathetic. The respiratory centre becomes depressed, causing slow, shallow, noisy, and laboured breathing. The cardiac centre is also depressed, and, as a result, the pulse becomes slow and weak. This is the time to operate if the operation be a severe one (the administration of the drug being discontinued), but for slight operations it is not necessary to go so far. As before mentioned, some say the time to operate is when the conjunctiva refuses to respond to the touch of the finger. I should most certainly never advise pushing the drug so far as this, as it must necessarily be beset with great danger.

Consciousness, at this stage, is completely arrested, but the vital centres in the medulla being lower, are merely depressed, and this depression is within safe limits.

In the dog, vomition may occur after the stage of excitement; if it should, the mouth must be emptied, and care must be taken that none of the ejecta finds its way into the trachea.

The phenomena of the second stage are transient if the administration be discontinued; therefore, it may be necessary to apply some more chloroform if the operation be unfinished: for this purpose the operator should always have an assistant.

Third Stage.—Beyond the second stage anæsthesia is extremely dangerous. The third is marked by complete loss of excitability of the medulla and cord, and thus the vital functions are depressed beyond the limits of safety. Respiration is almost arrested, and the effects of the drug are thus complicated by the presence of much venous blood in the system. The pulse becomes very weak and fluttering, the cutaneous vessels dilate, and pressure is reduced to *nil*. The lower centres governing the sphincters become depressed, and the animal may micturate involuntarily. Dogs may micturate at the commencement, from excitement, but this is not likely to be taken as a sign of danger. All the muscles relax, the pupil dilates widely, due in this case to paralysis of the third nerve. As before stated, however, the phenomena of the pupil are not constant.

Death may occur through the heart, respiration or both. The heart ceases in diastole from central or nervo-muscular depression.

Doses depend very much on the mode of administration. Horses and cattle usually take 2 ozs. to 6 ozs., dogs ½ oz. to 1 oz.

Modes of death.—Sudden death at the beginning of administration is supposed by Bartholow to be due to paralysis of the cardiac ganglia by the first vapour, or it may be due to shock or over stimulation of the inhibitory nerve. Death may also occur from cardiac paralysis during the stage of insensibility. This is said to be due to the loss of control over the lower centres by the cerebrum. The heart in this case ceases before respiration. This rarely occurs in the lower animals.

Secondly, death from tetanic spasm of the respiratory muscles occurs when the muscles become rigid. It causes accumulation of venous blood in the right side of the heart, and thus arrests its action. In this case the heart continues to beat after respiration has ceased.

Thirdly, death by paralysis of the respiratory muscles may occur in the stage of complete muscular relaxation, but it will be obvious that anæsthesia should not be carried so far.

Restoratory Measures.—Restoratives should be always kept at hand in case of need. If the mucous membrane becomes pale, and the pulse very weak, cardiac failure may be feared.

The administration must be at once discontinued and amyl nitrite applied to the nostrils. Injections of ether are also of great value in threatened cardiac failure.

If respiration becomes shallow and weak, and the mucous membrane purple, cold water should be dashed over the body and ammonia applied to the nostrils; all impediments to respiration removed, the tongue drawn forward in animals that can breathe through the mouth. Fresh air is of course the most valuable. Artificial respiration should be resorted to if practicable. Animals have been resuscitated by keeping the lungs inflated by means of a pair of bellows until the vapour was excreted.

I may mention here that when the operation is finished the patient, if down, should be made to lie until the effects have in some measure passed off. Cold water may be dashed over the head and body to expedite recovery. The animal should be assisted to rise, and supported for some little time when up. Knee-caps should be always put on before the animal attempts to rise.

Post-Mortem.—There are no constant *post-mortem* appearances in cases of death from chloroform. There may be signs of asphyxia or congestion of the lungs, but even these may be absent. If the vapour cannot be detected by the sense of smell, analysis of the tissues may be attempted in the following manner:—The tissues supposed to contain chloroform are put into a flask and distilled at a temperature of 160°F. and the vapour passed through a tube heated to redness. If chloroform be present, it will be split up into chlorine and hydrochloric acid. The acid reddens blue litmus and the chlorine can be detected by its setting iodine free from iodide of potassium, the iodide being detected by its action on starch solution.

(*To be continued.*)

FURTHER OBSERVATIONS ON ANTIVENENE, AND ON THE PRODUCTION OF IMMUNITY AGAINST SERPENTS' VENOM; WITH AN ACCOUNT OF THE ANTIDOTAL PROPERTIES OF THE BLOOD SERUM OF VENOMOUS SERPENTS.*

BY PROFESSOR FRASER, M.D., F.R.S.

(*Continued from page* 99.)

Influence of Diet in modifying the Minimum-Lethal Dose.—I have already drawn attention to the remarkable difference in the minimum-lethal dose of venom for herbivorous as contrasted with carnivorous animals. If this difference be

due, in any important degree, to the effects, transmitted and individual, of the special diet of each of these two groups of animals, it seemed probable that the minimum-lethal dose might be modified by changing the diet of any animal in whom this could be done without much deterioration of health; for example, by restricting the diet of a herbivorous animal to animal food.

A number of young white rats, accordingly, were put on an animal dietary as soon as they had been weaned; and, with the slight addition of a little vegetable food once or twice a week, found necessary to maintain them in fairly good health, this dietary was continued for seven weeks. To one of the rats, a dose of cobra venom, one-and-a-half times greater than the minimum-lethal, was then administered by subcutaneous injection, and, although marked symptoms of poisoning were produced, the rat recovered. Two weeks subsequently, the animal dietary having been continued, another of these white rats received twice the minimum-lethal dose, and it also recovered after a temporary illness. The experiments could not be carried further, as the other members of this family had fallen into bad health, and one after the other had died before this time.

In animals, whose progenitors had subsisted mainly upon a vegetable diet, the conversion of the diet into that of carnivorous animals is, therefore, alone sufficient to reduce the vulnerability to venom, and to cause, in this respect, an approximation to the resistance of a carnivorous animal.

This fact appears to indicate that the toxic effects of serpent's venom are due, to a large extent, upon an influence on the blood, an influence as yet only partially and imperfectly recognised.

Protection produced by Stomach Administration.—In the experiments which I have hitherto described, and, indeed, apparently in all others made in this new subject of Serum Therapeutics, protection has been produced by the subcutaneous or, less frequently, the intra-venous injection of the venom or other toxic substance.

These methods of administration are attended with inconveniences, which, it seemed possible, might be avoided were the toxic substance introduced into the stomach or other part of the alimentary canal. No doubt, the probability of thus producing protection is opposed by the fact, recognised even at the time of Celsus, and corroborated by such modern observers as Lacerda, Weir Mitchell, Fayrer and Brunton, and Calmette, that serpent's venom is either altogether inert,

or nearly so, when it is introduced into the stomach or any other part of the alimentary canal.

Even assuming that venom so introduced is inert, or nearly so, as a poison, it does not necessarily follow that it is incapable of producing protection; for this protection is, in part at least, dependent on the presence in the blood of a substance or substances which possess no distinct toxic action, and which may therefore be present in the blood as a result of the administration of venom, even although the venom did not produce any evident poisonous symptoms.

In order to obtain some evidence on this subject, the process for producing protection already described was applied to a cat, with the modification that the doses of venom were introduced into the stomach instead of being injected under the skin.

Taking as a basis the minimum-lethal dose by the latter method of administration, the cat received at intervals of from two to five days, one-fifth of the minimum-lethal dose on eight occasions, then one-fourth, and one-third; and at longer intervals, the minimum-lethal, twice, four times, six times, eight times, ten times, and so on, until, on the 116th day, a dose eighty times larger than the minimum-lethal was introduced into the stomach.

No observable disturbance was produced by any of these doses.

As in further administrations, doses of upwards of a gramme of dry venom would have been required, the experiment was not continued beyond this point, for such large quantities would have soon exhausted the rapidly-diminishing supply of venom.

Eight days after the animal had received by the stomach a dose of venom representing eighty times the minimum-lethal if given subcutaneously, a dose of venom corresponding to one and a half times the minimum-lethal was injected under the skin. No obvious general symptoms followed the administration of this dose, but some local œdema and skin necrosis were produced, and the animal has remained in good health until the present time.

During this experiment, an opportunity occurred for obtaining other facts of some interest. It happened that when the administrations of venom were commenced, the animal was already pregnant, and on the 54th day of the experiment two healthy kittens were born. These kittens were fed exclusively on the mother's milk, the mother continuing to receive gradually increasing doses of venom

One of the kittens, when fifty-seven days old, and when the mother had last received a dose equivalent to thirty times the minimum-lethal if given subcutaneously, received, by subcutaneous injection, twice the minimum-lethal dose of cobra-venom; amd only slight symptoms, consisting chiefly of drowsiness and loss of appetite, were produced, from which the kitten completely recovered in a few hours.

The second kitten, when sixty-nine days old, received, also by subcutaneous injection, thrice the minimum-lethal dose; but the protection produced through the mother's milk was insufficient to antagonise this large dose of venom, and death followed the administration.

Evidence in favour of the production of protection by stomach administration, as well as of the toxic feebleness of venom when given by this channel, has been obtained with white rats also. Single doses, corresponding to 10, 20, 40, 200, 300, 600, and 1,000 times the minimum-lethal if given subcutaneously, were given by stomach administration to each of seven different white rats. Sleepiness and loss of appetite, lasting for a day or two, were the only effects produced even by the larger of these enormous quantities, and all the animals entirely recovered.

A further experiment was made on the white rat which had received 1000 times the minimum-lethal dose. Seven days after this dose had been administered, and when the animal was apparently in good health, twice the minimum-lethal dose was injected under the skin. Distinct though not serious toxic symptoms were produced, consisting of sleepiness anorexia, and increase of salivary and bronchial secretion; but in less than twenty-four hours these symptoms had disappeared, and the animal was soon afterwards in a perfectly normal state.

It would, therefore, appear that although serpents' venom, even in enormous quantities, fails to produce any toxic effects when introduced into the stomach, it still confers upon the animal a certain and not inconsiderable degree of resistance against the toxic effects of subsequent lethal doses of venom. That it does so by causing an antidotal substance to be present in the blood is also manifest from the result of the experiment on the kitten, which had been fed with milk derived from a parent receiving venom by the stomach.

In circumstances which are no doubt exceptional, some of these results would admit of useful practical application.

They probably also offered an explanation of the protection apparently enjoyed by certain snake-charmers, as well as by

individuals who claim to be protected, whether members of special sects or not; for subcutaneous injection is not likely to be the method, and it certainly was not the method several hundreds of years ago, employed for the introduction of the protection-producing venom into their bodies.

Antidotal Properties of the Blood-Serum of Venomous Serpents.—The results of these experiments may explain also the clearly-established protection possessed by venomous serpents themselves.

They, as well as all other circumstances, render it important to determine whether the blood of venomous serpents contains, as does that of artificially-protected animals, an actual substance possessing antidotal qualities.

In order to arrive at some definite conclusion on this subject, I have made endeavours to obtain living venomous serpents, and also the serum separated from their blood.

Last year, an arrangement was concluded with one of the best known of the importers of wild animals to supply me with living cobras. He, however, has not succeeded in doing so, because of some exceptional difficulties; but, as an alternative, he has recently sent me several living specimens of the Hamadryas (*Ophiophagus elaps*), a serpent of greater size and more aggressive disposition than the cobra, and reputed to be at least as deadly as it.

A few days after their arrival, it was observed that moulting was about to commence; and as the condition of health is deteriorated during this process, blood has not yet been taken from any living Hamadryas. One of them, however, became sickly and died. A short time after its death the neck blood-vessels were opened, and, as coagulation fortunately had not occurred, a small quantity of blood was collected, from which a little blood-serum afterwards separated. As no liquid venom could be obtained from this Hamadryas, this serum has been tested against cobra venom. Two experiments were made, in which it was mixed with slightly more than the minimum-lethal dose of cobra venom, and the mixture then injected under the skin of rabbits. When the quantity of Hamadryas serum was ·15 c.c. per kilogramme of animal, death was not prevented: but as the animal did not die until more than seven hours, an antidotal effect had apparently been produced by this quantity of serum. In the second experiment, a larger quantity of serum was used—namely, ·25 c.c. per kilogramme, and the result was entirely successful, for not only did the animal survive, but no decided symptoms of poisoning were manifested during the six hours in which

the animal remained under nearly continuous observation. Two experiments were also made in which this antivenene wss administered thirty minutes after rather more than the minimum-lethal dose of cobra venom. In the first, the dose of antivenene was ·3 c.c. per kilogramme; but this dose was found to be an insufficient one, for the animal died in four hours. In the second experiment, ·5 c.c. per kilogramme of antivenene was administered, in the same conditions as in the former experiment, and it proved to be a sufficient quantity, for the animal recovered, after manifesting only slight toxic symptoms.

I hope by-and-by to extend these observations with blood-serum and venom, taken in more favourable circumstances, from the other and larger Hamadryas, which are now apparently in a state of excellent health.

It has, however, already been possible to confirm these results with the blood-serum and venom of another species of serpent. Dr. Thomas Bancroft, of Brisbane, Australia, has recently sent me the dried blood-serum of three black snakes (*Pseudechis porphyriacus*) of that country, and also some dried venom removed from the poison-glands of the same three serpents.

The venom, as it has reached me, is not a very active one, the minimum-lethal dose for rabbits being between ·003 and ·0035 gramme for each kilogramme of animal. At the same time, although this serpent is a member of the Colubrine family, the irritative effects at the position of injection, and even more so on the kidneys following its absorption, are intense. In all the experiments made with the venom alone, the urine voided within a few hours was of a dark red, almost black colour, and was found to contain a large quantity of hæmoglobin, but no blood-cells.

Although the quantity of dry serum was small, there was sufficient to allow three experiments to be made, for the purpose of determining if it can prevent death from being produced by a lethal dose of venom, when the two are mixed together before administration. In one of these experiments, the dose of serum was 1 c.c., and that of venom 0035 gramme per kilogramme of animal; in the second, the dose of serum was ·5 c.c., and the dose of venom the same as in the first experiment; and in the third experiment, the dose of serum was 1 c.c., and that of venom ·004 gramme per kilogramme of animal. In each case, the gratifying result was obtained that the animal survived the administration of these lethal doses of venom.

It has thus been shown that venomous serpents themselves possess a definite substance in the blood-serum, which possesses antidotal properties against their own venom and the venom of other species of serpents.

It is probable that the substance is produced from venom shed upon the mouth-surface, and absorbed into the blood from this surface or elsewhere in the alimentary canal, and also from venom absorbed directly into the lymphatics and blood-vessels of the poison-glands. At the same time, the protection which is enjoyed by several species of serpents may also be produced by venom introduced into the body with the venomous snakes on which some of them, and especially the Hamadryas, largely subsist.

The blood-serums of the two species of venomous serpents that have been examined are certainly not so powerfully antivenene as the serum which can be obtained from artificially protected animals. They have, however, been obtained in conditions which are not the most favourable for determining the true value of the blood-serum of serpents. This can probably only be done in the countries in which the serpents are found.

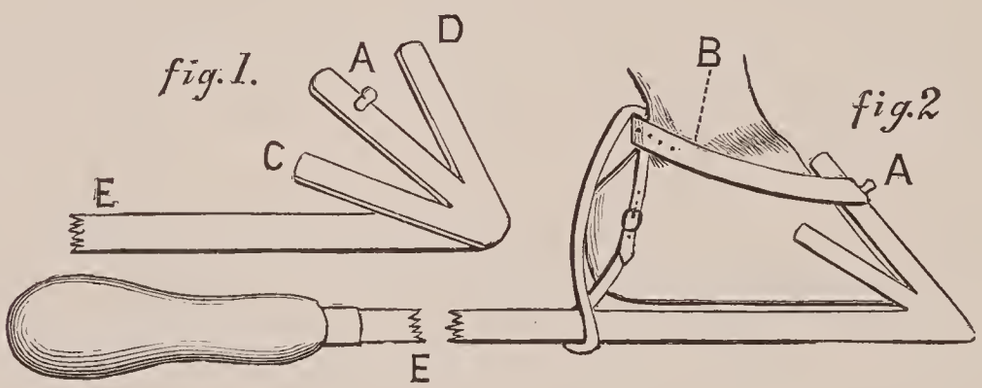
If this natural antivenene be found to be powerful, then a new, and in some respects convenient, source for antivenene will become available; but even if the antidotal power be not so great as that of the serum of artificially protected animals, it is possible that its value may be increased, and a sufficiently powerful antidote obtained, more rapidly than with entirely unprotected animals, by injecting several successive doses of venom into the serpents themselves.

FIBROUS ANCHYLOSIS OF THE FETLOCK JOINT.

BY JOSHUA A. NUNN, F.R.C.V.S., D.S.O., C.I.E., VETERINARY-CAPTAIN, A.V.D., PRINCIPAL LAHORE VETERINARY COLLEGE.

IN the VETERINARY JOURNAL for July, 1892, an article was published by Veterinary-Captain L. J. Blenkensop, A.V.D., and myself, on Fibrous Anchylosis of certain joints in the horse, and a method of treatment by forcibly breaking down the adhesions under chloroform and restoring to the joint its normal degree of the power of flexion was described. Details were given of the operation and how to obtain purchase and traction on the toe of the foot where adhesions were to be broken down in the fetlock. This was done by a piece of flat webbing adjusted round the foot in a particular manner, so that the whole force could be applied to the toe. There is a

certain amount of knack required in adjusting the webbing to prevent its slipping, which it is liable to do even with the greatest care; and as two or three men are required to pull on it the steady, even traction that is so necessary in breaking down old adhesions is almost impossible to get, as no matter how carefully instructed, it is very hard to get the men to pull together without any jerking. To obviate this I have had the apparatus shown in the sketch made. It consists of three claws to grasp the toe of the foot, one in the centre and one at each side, spread out above but joined together below. The centre one is the longest—about $3\frac{1}{2}$ or 4 inches—and is furnished with a stud A., Figs. I. and II., to which the strap B., Fig. II. is fastened. The side claws are about 3 inches long, the distance across the top between C and D, Fig. I., is three inches over all. The shaft E, Figs. I. and II. is about a foot long and terminates with a wooden handle like an ordinary



firing-iron. The apparatus is applied to the foot after the horse is thrown and is under chloroform, the strap B being buckled round the pastern, and the small strap F round it and the handle E. The straps are merely to prevent the apparatus from shifting. It will readily be seen that enormous leverage can be obtained on the toe, and that one person is quite able to exercise force enough to break down any adhesion no matter how firm; in fact, in ordinary cases I find that this can be done with one hand. The advantage of the operator having the whole force required under his own control instead of two or three men pulling and jerking at the webbing, is so obvious as hardly to require mention, and the amount of force exerted and degree of flexion given can be regulated with the greatest nicety.

The instrument of which the drawing is given was made by a native blacksmith, and although clumsy, answers its purpose, but no doubt an English workman could turn out a much lighter and superior article.

IMPERFORATE ANUS WITH FALSE OPENING—ANUS VULVALIS.

BY J. T. DUNCAN, M.D., V.S., PROFESSOR OF ANATOMY
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IN the July number of the VETERINARY JOURNAL, two cases of this peculiarity are recorded. The abnormality is an exceedingly rare one in the full-grown animal; not, however, so uncommon in the young. Some of these cases in the young come under the notice of the practitioner; others are allowed to live or die without professional assistance.

Fleming's "Obstetrics"* (under the heading of "Imperforation of the Anus") thus speaks of the condition:—"In young female animals, in which the rectum is absent, it often happens that the intestine opens into the vagina (vulva), and the fæces are expelled by that passage" (p. 760). Again, Rainard's directions for operation are quoted. Evidently a number of cases in the different species have been operated on successfully.

The same work quotes a case of operation by Leibenrogg upon a sow.

The subject was a nine-months one. So long as the animal was young and the fæces soft, no difficulty was experienced; but when the animal had to be fattened with bulky food, the vulval opening was not sufficient to serve Nature's purposes. The operation of opening into the rectum through the anus proper was successful, the fæces passed by the natural route; but when the animal was killed, six months after operation, the opening into the vulva had not entirely closed.

In discussing or reporting cases of this peculiarity, it will be well to come to some agreement as to terms, there being a good deal of looseness at present in this matter.

First, in reference to the name to be adopted. It should combine explicitness and brevity to as great a degree as possible. Without taking time to discuss the various names in use, it would seem to be desirable that we adopt one of those at the head of this article, viz., anus vulvalis. Not only does this indicate the position of the opening, not only is it short, but it is a term considerably used to express this condition in the human species.

What do we, as veterinarians, understand by the term vulva? Here, again, there is some confusion, for while some consider the whole passage from the os uteri to the labium to be the vagina, others hold that the posterior five inches of

* "Veterinary Obstetrics," by Dr. G. Fleming. Am. Ed., 1881.

that passage is the vulva. The latter contention is undoubtedly the correct one. Therefore, we speak of the vulva as extending from the labia to the hymen, being a passage (in the mare) of about the depth stated above.

We speak then of anus vulvalis, because the intestine opens into the vulva. If the opening were more than five inches in advance of the labial commissure, the fæcal discharge would be into the vagina proper. Then we should use the term anus vaginalis,* but this condition has not, I believe, ever been recorded as occurring in the lower animals. As has been already remarked, anus vulvalis is seen in a number of young animals. But it is extremely rare in the full grown. Two reasons exist for this. First, a number of those cases are successfully operated on when young, and second, many of the cases are allowed to die, not being considered worth the cost of an operation. And in some cases, where the anus is apparently well formed (although actually impervious) the animal may grow well to maturity before the condition is observed or understood. If the vulval opening is sufficiently large to allow the fæces to pass freely, and if there be no incontinence of fæces, it might be indeed many months before a professional man would be called to explain this condition.

While not of the same importance in the lower animals as in the human species, this abnormality claims from us, as veterinarians, some attention. And now that attention has been drawn to it by the interesting case published last month, it is to be hoped that systematic records of all cases, whether in the young or old, may be published in the veterinary journals. If the cases coming under the notice of practitioners, with a statement of the operations performed, and the results of such operations, were thus given to the profession, very valuable data would be accumulated.

It may be of interest to glance, for a moment, at the subject in connection with the human species. Many cases are on record—the vast majority, however, being in infants.

The opening into the vulva, in some of these cases, was a mere pinhole, in others it was double, and in still others, both a normal anus and an opening into the vulva were found. In these latter cases, fæces escaped in both directions. In some, no sphinctor could be discovered. In such cases, the patient is unable to control the lower bowel, in other words, there is incontinence of fæces.

* In the human being, when the anus opens into the vagina proper, that passage is found to be double.

In the human adult, as in the lower animals, cases of anus vulvalis are very rare, the chief reason for this being the successful operations performed upon infants.

The manner in which this interesting abnormality is produced is essentially the same in the human being as in the lower animals. It may be understood by a brief reference to the development of the intestine. Speaking now of the lower animals, the intestine in early fætal life is but a tube, closed at both extremities. There is at first no appearance of a mouth, nor yet of an anus. But a depression soon appears in the situation of the mouth, and this is lined by common integument. A similar depression, or pouch, also lined by integument, appears in the region of the anus and vulva, gradually growing more deeply into the embryo, to meet the intestine, and to receive the opening of the generative and urinary passages. This cavity being a common one, may be spoken of as a cloaca.

Ultimately, by the development of the intestine, and the deepening of the mouth, the septum shutting it off from the intestine is absorbed, and a similar process destroys the septum dividing the cloaca from the intestine posteriorly. The septa being gone, there is now an open tube through the length of the embryo.

But we have stated the cloaca to be a common cavity, the intestine entering it above the generative and urinary passages anteriorly and below. Nature now proceeds to divide off the intestine from the other openings. A thin, integumental band of tissue stretches transversely across the cloaca, and gradually growing, completely shuts off the upper part of this cavity from the lower. We thus have the anus divided off from the vulva. The anus is the posterior opening of the intestine, while the valva has opening into it the vagina and urethra. Now if, from any cause, the development of this transversed plate were arrested, it would not entirely divide the intestine from the vulva. The intestine then would open in two directions, viz., through the normal anus and into the cavity of the vulva.

Again, invagination of the cloaca is sometimes not complete. Sometimes there is no depression whatever above the transverse plate or band, then we have no visible anus; or the depression may be very slight. In either case the intestine is not likely to develop posteriorly sufficiently to pierce this thick septum. The transverse band being incomplete, the intestine opens into the valva, and we have the condition under consideration, viz., anus vulvalis. In the

last place, we may have normal invagination of all parts of the cloaca, we may have a complete transverse septum subdividing the cloaca into anus and valva, yet there may be an arrest of the development of the intestine backwards; so that the gut does not nearly touch the cloaca. Then we have a true case of imperforate anus.

A COMPLICATED CASE IN A MARE—RECOVERY.

BY JOSEPH N. CARTER, F.R.C.V.S., BURNLEY.

THE subject of my communication was that of a well-bred mare, aged about 17 years, the property of Messrs. John Taylor & Co., wine and spirit merchants, Burnley, the history of which cannot, I think, but prove interesting to the veterinarian on account of the rapid succession of changes of a grave nature that ensued during treatment, which I must confess, were somewhat perplexing to account for, and I must leave it for some of my more enlightened brother practitioners to unravel the mystery attached thereto.

July 4th, 7.45 p.m., received a message to visit the mare in question. Being out at the time, my assistant, who received the message, went at once, and upon his arrival examined the animal, and after careful enquiry, was informed that the mare had done a good day's work, and returned to the stable about 7 p.m., and then, to all appearances was quite cheerful, and nothing was noticed amiss until about 7.20 p.m., when it was found she had not eaten up her feed. She would take a mouthful, look back, and occasionally scrape with her fore feet. Pulse and temperature normal, no perceptible injection of visible mucous membranes. Came to the conclusion that it was simply a case of spasmodic colic, and at once administered a colic draught and hypodermic injection of morphia. In a short time patient seemed much better, and remained quite easy for some three hours, when the attendants were about to lock up the stable and leave for the night, when she again shewed signs of uneasiness. We were again sent for, and being at home myself when the second message arrived, I at once set out, and arrived about 11.30 p.m. Found mare very uneasy, standing over repeatedly from side to side of stall; body dry but deathly cold; would persist in nibbling away at some clean bedding, scraping occasionally. Mucous membrane injected. Pulse 60; temperature 101, with repeated eructations after swallowing, and peculiar muscular twitchings of the body. My greatest fear was rupture of the stomach, and I, under the circumstances, abstained from giving

medicine per oram, and contented myself with hypodermic injection of morphia m. xl., and left her for an hour, and returned about 1 a.m. Found mare easier; remained a short time, when she again commenced being uneasy, showing abdominal pains; at once gave instructions for the application of woollen rugs wrung out of boiling water. My orders were carried out in a most praiseworthy manner, there being about half-a-dozen men in attendance. These hot rugs were applied and re-applied every few minutes for two hours without intermission. She was then wisped down from head to foot, applied a little ammonia liniment to abdomen, and well rugged up. She still continued to show slight uneasiness. I remained in attendance until 4 a.m., when I retired to my bed until 8 a.m.

July 5th.—Found mare very restless, boring head into corner of stall against rack. Upon examination, found the head badly bruised and bleeding; pulse slow and wiry; temperature 101⅕; pupil of eye dilated; stertorous breathing. All eructations and muscular twitchings of body subsided. I continued to watch my patient's behaviour for a little time, and came to the conclusion I had cerebral mischief now to contend with. I had some sacks well stuffed with straw, and placed in such a position as to prevent further injury to the head; had a vinegar cloth applied to the poll, and administered cathartic ball. Called again 12 a.m.; found mare standing, propped with outstretched legs, quite blind, in fact in a complete state of coma. Pulse very slow and weak; temperature 103; head bored into corner; paddling about; extremely weak on her legs; expecting her falling over and expiring any minute.

3 p.m.—To my astonishment, found mare alive. Not quite so restless; paroxysms not so frequent and of less intensity; pulse 72, temperature 102. Had no movement of bowels since commencement of disease. Gave enema of soap and water and ol. lini one pint.

5 p.m.—Improvement maintained, though at times a little uneasy; stronger on legs. Administered ball containing belladonna and pot. brom. Pulse and temperature about same.

8 p.m.—Mare in semi-conscious state; taken a little sloppy mash of bran and linseed, and about a quart of luke-warm water; bowels still confined. Administered ball as before. Had the partition taken down and made a roomy loose box, and plenty of good dry bedding put down to encourage mare to lie down.

10 p.m.—Walking about; consciousness quite restored. Pulse 72, temperature 102. No response to physic and enema, but had micturated four times since last visit (two hours before). Remained with my patient until 1 a.m.; before leaving administered ball containing belladonna, ammon. carb., and nux vomica, and left one to be given about 6 a.m.

July 6th, 9 a.m.—Still improving; eaten a little mash and passed a little dung.

1 p.m.—About same. Pulse 64, temperature 102. Had her walked out a few minutes in the street. Administered ball as before.

7 p.m.—Mare very dull. Pulse 72, temperature $101\frac{3}{5}$.

11.30 p.m.—About same; very dull and listless. Pulse 64, temperature 102. Administered a stimulant and left her, only to be knocked out of bed at 2.30 a.m. Mare been down for the first time since she started, and rolling as if in great pain. Pulse and temperature about same as last visit. Shows signs of distress. No further movement of bowels. Gave hypodermic injection—morphia m. xl., and 1 gr. sulph. eserine, and enema of glycerine 8 oz; in a short time get relief.

July 7th, 10.30 a.m.—Mare easy; takes a little grass out of hand greedily; bowels still confined. Raked her and removed a small quantity of very dry fæces slightly stained with blood. Administered alt. ball and enema of ol. lini one pint.

12.45 noon.—Mare dull. Pulse 84, temperature 102. Mucous membranes very injected; still no movement of bowels.

1.30 p.m.—Mare down and rolled as if in pain. I was again summoned. Pulse 80, temperature $102\frac{1}{5}$; fœtid breath from left nostril; breathing slightly accelerated. Gave hypo-sulphite of soda in drinking water.

5.30 p.m.—Mare lying down and appears quite easy; pulse 80, but weaker; temperature $102\frac{1}{5}$. Raked and removed very hard dry fæces. Could feel distinct ulceration of the mucous membrane lining the bowel at seat where I had broken down concretions. Enema of ol. lini and soapsuds and glyc. bellad., with hose pipe about six feet long attached to pump, taking the free end of pipe in as far as my arm would permit before injecting fluid.

9.30 p.m.—Mare improving. I am informed she had a fairly good motion about six o'clock. Breathing normal. I administer ball containing ammon. carb. and nux vomica, and enema as before. Breath sweet.

11 p.m.—Mare had three natural motions of pultaceous fæces.

July 8th, 4 a.m.—Called out of bed, mare very uneasy, wanting to lie down and in endeavouring to do so, instantly jumps up before really reaching the ground as if in the greatest pain, scraping with feet. Pulse 80, temperature $102\frac{3}{5}$. No further motion since last visit. Enema as before with long pipe. Hypodermic injection morphia m. l. and ball containing bellado. chlor. hyd.

10.30 a.m.—Mare easy, raked her, and removed small quantity of soft dung. Pulse 84, temperature 101. Apoplectic condition of bowel and had to conduct enema pipe with great care and injected ol. lini one pint, and glyc. bellad. 2 ozs.

5.30 p.m.—Mare visibly growing weaker, refuses all food. Pulse 92, temperature $102\frac{1}{5}$.

11.30 p.m.—Mare somewhat brighter, no further motion of bowels. Pulse and temperature about same, shows signs of uneasiness occasionally, so again had the hot blankets applied for three hours without intermission. Administered ball as before. Enema with long pipe and hypodermic injection of morphia m. l. at 2 a.m., and left her easier at 2.35 a.m.

July 9th, 10 a.m.—Mare had a fairly good night. Pulse 72, temperature $100\frac{4}{5}$, no movement of bowels, ball as before, and enema this time with ol. terebinth 1 oz. added.

2.30 p.m.—Mare about same, takes a little gruel, and also nibbles at grass.

9.30 p.m.—Mare much as before but had a good motion about five o'clock, inserted hand in rectum and found it much dilated and full of watery fæces.

July 10th, 10 a.m.—Mare much improved, had two motions during the night. Pulse 60, temperature 100. Administered nerve tonic ball.

10 p.m.—Improvement maintained. Pulse and temperature same, does a lot of grinding of teeth, from what cause I cannot say.

July 11th, 9 a.m.—Mare still improving. Pulse 52, temperature 100, eating better, taken some hay tea greedily, administered tonic ball.

10 p.m.—Much about same in every way, grinds teeth less frequently, ball as before, had several motions.

July 12th, 9.30 a.m.—Mare not so bright. Pulse 60, temperature $100\frac{3}{5}$. Administered nerve tonic ball.

8.30 p.m.—Appears more cheerful, dung assuming more natural consistency. Pulse 56, temperature $100\frac{1}{5}$. Adminis-

tered ball containing ammon. carb. and nux vomica and gentian, ceased grinding of teeth, eating well. I attended my patient until July 17th, when she was discharged cured, and is now working every day, and appears none the worse for her illness. Was it a case of acute indigestion, followed by coma and stoppage ?

ENTERITIS IN A DOG, ACCOMPANIED BY RABIFORM SYMPTOMS.

BY F. J. WILSON, ESQ., M.R.C.V.S., HUDDERSFIELD.

ON August 6th I was called to see an Airedale terrier that was suspected of being rabid. For a day or two the dog was noticed to be a little strange in its behaviour, running about, snapping at things, and hiding under chairs and tables. Having got out, it ran into a wash-house, where it was locked up. Here it was observed to behave in the same manner, snapping aimlessly at imaginary objects, but not howling or showing other symptoms of pain. The owner thought that it was a little lame. It refused all food. It died three days after being shut up, without developing any further symptoms. On *post mortem*, all the organs were found to be healthy except the intestines. There was a complete absence of food in the stomach and bowels.

On examining the brain, the ventricles were filled with fluid, the membranes being slightly congested.

The condition of the intestines was remarkable. The mucous membrane was red in colour, thickened, and studded all over with little eminences.

They could be distinctly felt under the finger, and appeared to be confined to the mucous coat. They were about the size of No. 1 shot. They were most numerous in the colon, and were found in decreasing numbers almost as far as the anus.

On examination of these raised places each was found to have a depression or crack in the top, looking like an erosion of the epithelium.

I have had a few such cases before, but have never seen any showing such pronounced symptoms as this one. My impression (which has been confirmed by Principal Williams), was that the disease was of an infectious nature, and that it belonged to one of the many ill-understood forms of intestinal mycosis.

LYMPHADENOMA OF THE LIVER IN THE DOG.

BY F. J. WILSON, ESQ., M.R.C.V.S., HUDDERSFIELD.

On making a *post-mortem* examination of an old retriever that had died after a week's illness during which there were symptoms of gastritis and intestinal trouble, a remarkable condition of the liver was revealed. The whole organ, which was puckered and distorted out of all semblance to a normal liver, looking indeed more like a bunch of grapes, had on its surface and through its substance whitish suety-looking masses, so numerous were they that almost all trace of liver substance had disappeared, making one wonder how its functions could possibly be carried on by such an altered organ. On cutting into these masses they were found to be hard and dry, contained no trace of pus, indeed they were cartilaginous looking. Principal Williams, to whom the liver was submitted, states that it was a case of lymphadenoma. He states that the only other disease with which it could be confounded is, perhaps, tuberculosis, but as there was no tubercular condition of other organs and as there was an absence of tubercle bacilli in the liver, there can be no doubt but that this was an advanced case of lymphadenoma of the liver.

MONSTROSITY.—DELAYED PARTURITION.

BY CHARLES DRABBLE, ESQ., M.R.C.V.S., BRADFORD.

On August 8th I was sent for to calve a heifer. I saw her about 3 p m., and on making enquiries, found that she had made all preparations for calving in February last, shewing labour pains all one day. The "water bag" was stated to have shewn itself, but this gradually disappeared. The ligaments again assumed their normal condition, and the animal continued to thrive and do well until the 7th of August, when she again prepared for calving. The throes were violent, the water bag burst immediately on presenting itself, and a large portion of the bowels, and the liver of the fœtus were expelled.

Finding that the heifer was in a dying condition on my arrival, I advised that she should be slaughtered, and this was done, and the fœtus, which appeared to be a remarkable monstrosity, I have forwarded to you.

(The specimen, which was much decomposed, turned out to be a Celosomian Monstrosity. While the thorax was properly formed, the ribs articulating with the sternum, and closed posteriorly by the diaphragm, the abdominal walls were absent, and the viscera floated about unconfined.)

SEPTIC PERITONITIS FOLLOWING CASTRATION

BY JOHN CAMERON, ESQ, BERWICK-ON-TWEED.

TWO yearling colts castrated by me in the usual manner and with the usual precautions as to cleanliness, etc., both died. They were operated on by the actual cautery.

The bowels, on *post-mortem* examination, were seen to have a reddened appearance on the peritoneal coat, a blush merely, no intense hæmorrhagic congestion, the mucous coat being in most parts of the bowel normal. In the cæcum, however, there was much thickening of the mucous membrane. Here and there on the peritoneal surface of the bowel, and confined to the peritoneum and sub-peritoneal tissue, were lozenge-shaped raised patches, reminding one somewhat of the ulcer of the bowel in swine plague. In the small intestines, where they were most numerous, they appeared to be related to Peyer's patches.

It was altogether a peculiar condition of the bowel, and a portion was sent to Principal Williams for examination.

(The patches, as stated, were limited to the sub-peritoneal tissue, and could be separated readily from the sub-jacent muscular coat of the bowel. The mucous coat was intact, and appeared to be almost normal.

After hardening in sublimate, and afterwards in spirit, sections cut through the patch and stained by Gram's method gave beautiful preparations of bacilli lying in depôts in the fibrin, of which the patch was made up. They were in the spore filament stage, and showed long chains intricately coiled.)

THE UNIFICATION OF ANATOMICAL NOMENCLATURE.

BY PROFESSOR O. CHARNOCK BRADLEY, NEW VETERINARY COLLEGE.

SUCH is to be one of the subjects of debate, in the Anatomical Section of the Sixth International Congress of Veterinary Medicine, to be held at Berne on the 16th to 21st of this month. We believe that this is the first time a special anatomical section has been formed in the International Congress, and a more fitting subject for discussion could not possibly have been found for its inauguration.

The present confused state of the nomenclature used in veterinary anatomy, is little short of a disgrace to this important branch of biology.

To take the instance of the names given to bones:—a most unsatisfactory state of affairs exists; some authors adhere

almost entirely to the name employed by human anatomists, without apparently considering for a moment, if these names are at all applicable to similar parts in the lower animals. For example, the name *pisiform* has been used to designate a bone, the shape of which could scarcely be less like that of a pea ; and this has been done solely because a corresponding bone in man receives and merits this name.

If we examine the names employed in osteology generally, we must be struck by the remarkable lack of method ; the shape of one bone, or part of a bone, the position of another, and the supposed resemblance of a third to some familiar or unfamiliar object, &c., have all been made use of in compiling the existing erratic nomenclature.

In naming the muscles there is an even greater confusion ; names have been borrowed from human anatomy, or new ones coined just as a particular author has thought best. The number of synonyms is consequently appalling. Take for instance the *great anterior straight muscle of the head ;* it has received from different authorities the following names : —Long flexor of the head, trachelo-suboccipitalis, rectus capitis anticis major, and trachelo-occipitalis.

It is useless to go on multiplying examples, but in all the divisions of anatomy the same condition will be found to exist.

The present system is unsatisfactory to student, teacher, practitioner, and biologist alike. The student has to cumber his brain with a number of perfectly useless terms. The teacher must be continually making use of two, three, or even more names where one should be sufficient. The practitioner, when he reads an article in which anatomical terms are employed, has probably to make repeated references. And the biologist, unless he is quite familiar with the standard works on veterinary anatomy, finds himself in an even worse position.

What is there to prevent us having an universal nomenclature ? The formation of such a nomenclature will have to be delegated to a special commission composed of all the leading veterinary anatomists. The resultant advantages will be numerous and great, the most important of which will be greater facility for exchange of ideas, and less labour in teaching.

A PECULIAR CASE.

BY A. MACGREGOR, ESQ., M.R.C.V.S., CRIEFF.

SENT for at 11 a.m. to see brown carriage gelding, the property of William Forbes, Esq., stated to be very much

swollen about the lips and mouth, with continual dropping of saliva; appears hungry and thirsty but is unable to swallow. Is very shaky on the legs. When I saw the animal he was standing in the stall, the fore-legs spread out in front and the hind ones well under the belly. Pulse and temperature were about normal; when pushed back he dragged the fore-feet instead of lifting them. When taken out he seemed very shaky and staggering in his gait; threatened to fall when turned round. I examined the mouth, but could detect nothing except that there was swelling of the lips and that the tongue was furred and almost black at the root. When the head was held up he was quite able to swallow, and seemed then to be greedy for food and drink, as if hungry and thirsty.

I gave him a purgative ball with great difficulty, and blistered the throat and œsophagus with mustard.

The shoes were removed and the feet poulticed.

The horse had always been a shiverer and a bad thriver.

Next day, as I was unable to visit him, I sent an assistant, who blistered the sides for congestion of the lungs, when the horse became so violent that he had to be shot.

Post-mortem.—All the organs, with the exception of the stomach, seemed to be healthy. The mucous membrane of the stomach was swollen and was very dark in colour; appeared greatly congested. The tongue also was tumefied and dark in colour.

The case was probably the result of long-continued indigestion, and would probably have recovered under stomachic treatment.

Editorial.

NOTIFICATION OF DISEASE.

A VERY serious question has been proposed by the Government for solution by the veterinary profession. The question, like so many others that have revolutionised the world of medicine, is apparently very simple and very innocent, and might tempt the inexperienced practitioner to an off-hand, careless answer; but I confess, for my own part, that the more I study it, the more does it seem surrounded with difficulties. In this article I do not presume to dictate a policy to my professional brethren; I cannot even say that I see my own way clearly through the maze. I merely wish to point out to the profession the arguments that may be used in favour of and against the Government proposal, and to urge upon my

fellow-practitioners the importance, indeed, the vital necessity of pondering the matter well, and discussing it frequently and carefully before the official answer is sent to the Board of Agriculture.

The first point to be noted is the fact that we have attained such a status as to command the confidence of the Government, and we must admit that this recognition, though tardy, means for us the attainment of a very desirable object. It has been a constant grievance with us that we have been slighted, and our claims put aside in favour of non-professional officials, whose interference in veterinary affairs has been an insult to us. If we can, by co-operating with the Board, get rid of this vexatious outside element, surely we shall have scored something in the game of life, surely it will be worth our while to submit to a little inevitable friction with the world and with our clients.

So far, our path is clear, but after this comes obscurity and difficulty. Suppose an Act of Parliament should be passed. Is it to apply to veterinary inspectors only or to the general practitioner as well? Is the law to be binding on the whole country, or is it to be left to the Local Authority to adopt the Act or not, as it chooses? This freedom of choice is the great blot and the essential weakness of the corresponding Medical Act. Is the notification of disease to be promptly followed by measures for its isolation and eradication? Is the veterinary surgeon to be invested with the powers of a coroner, and must all cases of death among animals, barring those from accident or natural decay, be reported to him for investigation? If inspectors alone are to be compelled to notify contagious diseases, these men may say good-bye to all chance of private practice, for they will be avoided like the plague; no one will employ them who can get any other practitioner to attend his horses or cattle; every effort will be made to outwit and deceive them, and they will come to be regarded with suspicion. Even if *all* veterinary surgeons should be compelled by Act of Parliament to notify, the same thing would take place, only the ill-will in that case would be extended to the whole profession, and to counteract such a misfortune and such a danger it would be necessary to invest the veterinary surgeon with power to investigate *all* deaths amongst animals, and make it penal on the part of the public to conceal the presence of disease.

The Act would likewise require to be made applicable to the whole of Great Britain and Ireland. If it is to be passed at all, no discretionary power must be left to municipal or

county authorities to adopt the Act or neglect it. Let us suppose that the city of Edinburgh adopts the Act and all veterinary surgeons within its bounds are compelled to notify ; let us suppose that the county of Midlothian does not adopt the Act, what is the result likely to be? All the unscrupulous, and all the timid, and, what is more, all the poor owners of animals will invite practitioners from the neighbouring towns and villages to prescribe for their animals and so the purpose of the Act will be frustrated. Suppose Newcastle adopts the Act, and Gateshead does not : at once all veterinary business goes south of the Tyne. It seems quite clear to me that the Act, if it should be passed, must be universal and inexorable, but our legislators will find when they come to consider the matter that although the principle is sound the details of working present tremendous difficulties.

The public also, and especially the horse-owning public, will insist on having a voice in the matter. They will ask if the business, say, of a great carting-contractor or brewer is to be paralysed because a veterinary surgeon has put his ban on their stable, suspecting the presence of glanders or influenza. They will talk about our theories as "mere fads" ; they will strenuously object to our inoculating their, apparently, healthy animals, and tell us that we are merely spreading disease and death ; they will say, "Take away to your hospital (if you have one !) an animal that is plainly diseased, and cure it if you can, but don't interfere with our working the other animals, and don't frighten our neighbours with your spectres of disease, and prevent them from helping us." This brings up the whole question of compensation, which will require the intervention of the Chancellor of the Exchequer and a special clause in next year's budget !

Proceedings of Veterinary Medical Societies, etc.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 122.)

Chloral Hydrate.

ALTHOUGH not an anodyne in the strict sense, is one of the most valuable agents that we can use to combat the pain exhibited in stomach and bowel affections. It does not act as a sedative to the periphery of sensory nerves, but in an indirect manner through nerve centres. Medicinal doses are anodyne, hypnotic, and anæsthetic in full doses ($\frac{1}{2}$ to 1 ounce). Its hypnotic effect is the most marked, and it is not followed by nausea. As compared with opium it acts more quickly, it does not interfere with peristaltic movement or intestinal secretions, and it frequently induces sleep, which is most

beneficial in protracted abdominal pain. In cases where there is much flatulence, I usually give it in combination with ammon. carb. in ball. The dose generally prescribed is from one to four drams, but I find the small doses of little or no use. I never give it in these cases in doses of less than half an ounce. Some writers deny its good effect unless it is combined with opium. I have found it, however, to be quite as efficacious without.

Cannabis Indica (*Indian Hemp*).

Although in comparison with the other anodynes, Indian hemp may be termed a modern drug, it has been in use on the continent and in this country sufficiently long to have established itself as one of the foremost in the list. It has several ingredients, the chief of which are cannabin and cannabinon. It is probably the first of these that is the most useful active principle. It is described as a deliriant, narcotic, anodyne, and anti-spasmodic by Finlay Dun; as an intoxicant, deliriant, and narcotic, by Dr. Mitchell Bruce and Sir Robert Chrisistan, writing upon its use, says for "energy, certainty, and convenience, Indian hemp is the next best anodyne to opium, and often equals it." It possesses advantages over opium and its preparations, inasmuch that it acts quicker, its effects are more lasting, and that it does not produce nausea, neither does it check intestinal secretions and peristaltic action. I believe that the various phenomena observed after its use depend entirely upon the dose given, and that if large doses be given none but hypnotic effects will be produced. The alcoholic extract in ball is the form in which it is generally used in veterinary practice, as being the most convenient, although a good solution can be made of the extract with gum tragacanth and glycerine, for giving in draught. The doses usually prescribed, 1 to 2 drams, are of no use whatever, and if those writers who have not been favourably impressed with its use have given it in this quantity I am not surprised at their conclusions. These doses will produce little delirious excitement, but desirable effects are only to be obtained by the administration of from half to one ounce. Within from ten to thirty minutes after receiving the full dose of the extract, the patient will be in most cases fully under its influence, and will be thoroughly quiet and free from pain. It is sometimes given in doses of one ounce or more, and a deep narcosis is induced which lasts for some time; I fail, however, to see the advisability of producing this extreme narcotic state, and then having to use stimulants to revive the patient. I have in a few instances, in large powerful dray horses, given these large doses; but, as a rule in my patients, which are horses of a medium build, and many of them pit horses, I find from 4 to 6 drams to be quite sufficient. When there is a recurrence of the pain after the effect of the first dose has passed off, I have upon several occasions repeated it, but I do not usually find it necessary, for if there is any chance of a favourable termination relief will follow the first dose. In those cases where a second or third dose has been given there has been a fatal termination, and *post-mortem* examination has disclosed either twist, hernia, or calculus. I do not think it is preferable to opium or morphia in every form of intestinal disease, but for combating the pain in gastric impaction, colic, and impaction of the large bowels, I believe that it has no equal. Its effects in enteritis and peritonitis are not so marked, neither is its use indicated here; opium or morphia are preferable, because they check peristaltic movement and allay irritation, which is most essential in an inflamed part. As cannabis indica given in ball takes some little time to dissolve in the stomach and exert its influence, I have given, if pain be very severe and animal very violent, 2 or 3 grains of morphia immediately before the ball; but only in one or two cases, and I never follow up the morphia injection.

From continued use of morphia a condition of excitement is liable to be

induced which is frequently mistaken for increased or continuous pain, the patient walks incessantly round the box shaking its head, etc., and if the true nature of the condition be not clearly defined more morphia is given in the hope of eventually subduing the pain; but as a matter of fact produces disastrous results. I was first induced to use cannabis indica some four years ago from reading some interesting records of its use by Professor F. Smith, A.V.D., and until that time I had relied chiefly upon opium and chloral hydrate as anodynes. I have records of many cases in which part have been treated with those agents and part with Indian Hemp, but I have no hesitation in giving a verdict in favour of the latter. To be brief, I claim for it the following advantages over opium and its alkaloid:—It acts quicker, its effects are more lasting, it does not combat the action of purgatives, and so allows the contents of the bowels to be evacuated more quickly, which being done there is usually a cessation of pain. I have also noticed that after repeated large doses of opium or morphia there has been some kidney derangement and scarcity of urine, but I have not noticed such effects after cannabis indica.

Chlorodyne.

This is another very useful agent in gastro-intestinal irritation. It is prepared from various formulæ, but in most of them chloroform, morphia, and prussic acid are the chief ingredients. It is most efficacious in cases of colic with severe spasm of the intestine, and given in doses of from one to two ounces it quickly relieves pain. It acts as an anti-spasmodic and anodyne, without the marked sedative effect of opium or cannabis indica. If flatulence be present good results follow its administration along with two or three drachms of ammonia or soda carbonate. It does not nauseate, and there is no depression after its use. If diarrhœa is present it acts as a mild astringent, but does not check secretion so violently as opium does. It is also a good carminative. In cases of spasmodic colic, where for various reasons, a strong purgative is not desirable, chlorodyne 1 oz. given with ol. lini 12 oz. has a very good effect.

Aconite.

Although aconite is probably not extensively used in the treatment of these diseases and is not strictly speaking an anodyne, it is a valuable agent in some affections. It acts upon the periphery of sensory nerves and also lessens the frequency and force of the heart's action. It is rapidly absorbed and its effects, especially upon the heart's action, are almost immediate. I have found the most benefit from its use in enteritis and peritonitis, in combination with opium, the pulse of 80 or 90 beats per minute being lowered 20 or 30 beats within an hour of the administration of m.v. of Fleming's Tincture. The fever in these cases is greatly controlled by its use, the temperature gradually falling. Its use requires the greatest care and it should always be freely diluted, and should never be given in combination with ammonia, as it is liable so combined to have a peculiar but dangerous action upon the muscles of the throat. Where there is a feeble pulse and great prostration I would not prescribe it, as its influence upon the heart's action may bring about bad results. As to its anodyne properties in other forms of intestinal diseases, its effects cannot be compared with those of the beforementioned agents.

Ether.

Sulphuric ether possesses anodyne, and anæsthetic and stimulant properties, but it is for its anodyne and stimulant effects that it is most useful in abdominal pain. It stimulates mucous membranes and increases their secretion; it also stimulates the circulation in the intestinal walls, and excites peristalsis, arrests fermentation, and expels flatulence, and is a valuable antispasmodic where there is not flatulence; it can with benefit be given as

alcoholic stimulant. It is extremely volatile, and quickly evaporates, and should always be given in cold fluids. In pit horses that are, as a rule, irregularly fed and over-worked, colic and its complications is common, and if pain be acute, the animal is soon in a state of collapse, due to exhaustion and low vitality. The administration of full doses of ether in connection with opium or chlorodyne in these cases, is the only chance we have of a favourable termination.

Turpentine.

Oil of turpentine is a stimulant, anti-spasmodic, and a carminative. When swallowed, it is rapidly absorbed by mucous surfaces, it acts as a stimulant to the walls of the stomach and intestines, arrests fermentation, and expels flatulence. It is a valuable carminative, and also aids the action of purgatives. Its remote effects are dangerous, as it excites diuresis and irritation of the kidneys. In flatulence due to feeding on green clover, I have frequently given it with good effect in the following form: ol. tereb. 2 ounces, acid carbol. 1 dram, ol. lini. 12 ounces. It is, however, unsafe to repeat its administration too often; and as we have other agents a great deal safer and equally effective to use, it should not be regularly given in the treatment of abdominal diseases. In spasmodic colic, it is not an infrequent occurrence to see the animal making ineffectual attempts to urinate. This is due to the spasm of the neck of the bladder, which will generally be relieved by an anodyne or a warm water enema. This condition, however, is often mistaken for some fancied kidney derangement, and oil of turpentine in repeated doses, given with a view of causing urination, whereas nephritis and death are often caused.

Purgatives.

We now come to the other class of agents which it is necessary to use in most cases of gastric and intestinal disturbances, viz., purgatives. I say in most cases, because there are a few instances in which their administration is not absolutely essential, but as a rule we cannot consider our patient safe until the bowels have been acted upon, and free evacuation obtained. Purgatives or cathartics possess the power of cleansing the bowels and evacuating their contents, and act in various ways. They are divided as follows: Laxatives or aperients, simple purgatives, drastic purgatives, cholagogues, saline purgatives and stimulants of muscular fibre. They may be classed under the foregoing heads in the following manner:—Laxatives, ol. ricini. ol. lini; simple purgatives, aloes, aloin; drastic purgatives, ol. crotonis; cholagogues, calomel; salines, magnesium and sodium sulphates; muscular stimulants, physostigmine, pilocarpine, nux-vomica.

Laxatives.

Neither ol. ricini. or ol. lini. owing to their mild action and uncertainty, can with confidence be relied upon in the treatment of impaction of stomach or bowels, but there are instances in which the use of them is more safe than the use of stronger purgatives—for instance, in indigestion or irregularity of the bowels often accompanied by slight pain which occurs during dentition. Oleaginous purgatives are useful in removing undigested matter from the alimentary canal without griping or nausea, also in pregnancy, peritonitis, and in those cases where hernia or calculus is suspected to exist, they should be given in preference to aloes. In chronic constipation, where it is necessary to repeat the purgative several times, they can be given with safety and advantage. However, when a favourable issue is dependent upon the early action of the bowels, and where none of the foregoing conditions are suspected to exist, aloes, or other stronger purgatives should have the preference. In short, oils are very useful where, from various causes, any agent more violent in action is inadmissible. Of the two ol. lini. is most commonly used in the

horse, and is given in doses of from 10 to 20 ounces, where alone or in conjunction with tr. opii., chlorodyne, ol. tereb., or acid carbol. It is bland and unirritating, and its action upon the bowels is chiefly mechanical.

Aloes and Aloin.

Aloes (of which there are several varieties) is the purgative most frequently used in the horse. The varieties are the Barbadoes, Cape, Socotrin—the first being the most reliable and best, it contains more of the active principle (aloin), is more certain in its effects, is not liable to gripe, and does not possess the amount of impurities and insoluble resinous matter that the other kinds do. It has long been used in the treatment of the diseases of the stomach and intestines, but there is a great difference of opinion as to when and under what circumstances it should be given or withheld. Upon entering the stomach, aloes is dissolved by the gastric fluid, and is emulsified by the pancreatic juice in the duodenum. It acts chiefly upon the large intestines, and is rather slow in action; it also enters the blood and causes increased circulation in the pelvic viscera (notably the uterus and bladder). Whilst in the intestines it increases peristaltic action and secretion; it also increases biliary secretions, and may cause diuresis. The evacuations after its use are copious, but are not so watery as those caused by gamboge or croton. If given in too large doses it will cause tenesmus, bleeding, and superpurgation. When given alone aloes is liable to cause griping and nausea, but these unpleasant effects are lessened by the addition of such agents as ginger, belladonna, or cayenne.

Owing to its many therapeutic properties, it is without doubt one of the most valuable agents in the pharmacopœia, but its use in the stomach and intestinal cases requires the greatest care. Many cases are probably lost through its omission, whilst in others a fatal termination is induced, or hastened by its use. Its action upon the uterus renders it very unsafe to use in pregnant mares, and owing to its excretion by the mammary gland, griping and nausea are likely to be produced in the foal when given to suckling mares. In all cases where a feeble pulse, exhaustion, or signs of fever or inflammatory action are present, aloes should not be given. I frequently meet with this kind of case in hard worked and improperly fed pit horses, and since discontinuing the use of aloes and resorting to other means of emptying the bowels, I have had better results.

There is a great difference of opinion amongst practitioners as to the best way of administering aloes, some advocate its use in balls others always give the solution. The proper way to prepare the bolus is also a subject of controversy, these minor details may be considered out of place here, but I am satisfied that the action of an aloetic purgative depends in a great measure upon the way it is prepared and administered. I am in favour of the bolus, it is certainly cleaner, more pleasant for the horse to take, not so nauseating, and is handier than the drench. The solution is not so certain in its effects, as if a temperature over 150F. is reached in dissolving the aloes the active principle is destroyed. The mass for bolus should be prepared in small quantities and often. I find that the best way is gently to warm the aloes in a water bath along with a third of the quantity of glycerine, a dram of ginger to each ounce of aloes, and to run this mixture when cooling into gelatine capsules and hermetically seal them. In this way it will keep soft, and upon reaching the stomach soon undergoes solution and is a great contrast to the ball which is made of aloes boiled up with soap or ginger and rolled in a paper when cold, and kept in a dry place until it becomes as hard as a brick. I have seen many of this type and have heard surprise and disappointment expressed at their slow effect. The doses must be varied according to the size and condition of the animal and to the nature of the impaction, but for all ordinary

purposes from four to six drams are sufficient for country horses, and I am told that town dray horses require 8 to 10 drams to purge them. As to the time required for a full dose of aloes to act nothing very definite can be stated, for the action is influenced by a great number of circumstances, among which are breed, temperament, and nature of food, quality of aloes, and the condition of the walls, stomach and intestines. If there is much distension and paralysis of muscular fibre the action is very much protracted. I have generally found that in the average case from 9 to 12 hours will elapse before there is any action; moderate exercise where practicable and admissible will hasten it.

Aloin.

The active principle of aloes was discovered in 1850 by Smith, of Edinburgh, but notwithstanding the long time that has elapsed since then its use in veterinary medicine cannot be said to have become common. The medical profession, however, have more universally adopted its use. Mr. Finlay Dun, and Mr. Dollar, of London, have both used it extensively and speak in its favour. Personally, I have not used it, and I cannot say much about it.

Croton Oil.

This is the expressed oil of the Croton Tigilum, and is a drastic purgative, causing copious and watery evacuations. It is believed that the active principle of the oil is developed in the intestines by its saponification; owing, however, to its violent effects and its liability to cause irritation and inflammation of mucous membrane of the alimentary tract, its use in the horse is most unsafe, and I do not suppose that it is much used by the qualified veterinary practitioner, but that it is often an ingredient of the purging draught of the empiric (which is given to both horses and cattle alike), I think there can be no doubt. I have, upon several occasions, found on *post-mortem* examinations inflammatory patches in the stomach and intestines, after drenches of this description have been given, and where no other cause was traceable. I have upon a few occasions used it, but have now, for some time, discarded it altogether.

Calomel.

Sub-chloride of mercury or calomel acts as an indirect cholagogue, it greatly increases the elimination of bile, but not the secretions. It is very useful in constipation or impaction, and in non-elimination and re-absorption of bile—a form often seen in pregnant mares. I have not found any particular advantage from its use in ordinary cases, but I believe that good results follow its combination with aloes in other morbid conditions, such as lymphangitis, etc.

Magnesium Sulphate (*Epsom Salts.*)

Although this is generally used as a purgative for cattle and other ruminants, it possesses no mean value when used as a purgative in the horse. It causes an increased outpouring of the secretions from the intestinal walls, and prevents re-absorption of bile from the duodenum, but does not increase biliary secretion. In gastric or intestinal impaction with urgent symptoms and acute pain, and where the main object is their early evacuation, the sulphate of magnesium is not to be relied upon, except in pregnancy or in other conditions unfavourable to the use of aloes or physostigmine; but where the symptoms are constipation, drowsiness, yellowness of the visible mucous membranes, slight colicky pain, and where no urgent and distressing symptoms are exhibited, it is a most useful agent. I have found that in five or six hours after the administration of from four to six ounces, in drench or a warm thin mash, that there have been copious evacuations, and that the yellowness of the membranes has begun to disappear.

Sodium Sulphate.

This agent is similar in its action to magnesium sulphate, but that it increases biliary secretion and peristalsis. It is given in about the same dose as magnesium sulphate.

Physostigmine or Eserine

Is an alkaloid derived from the Calabar bean, and is what may be termed a modern drug. I believe that it was first brought prominently before the notice of the veterinary profession in this country by Professor F. Smith, in some reports made upon its use published in *The Veterinary Record* in 1886, and since that time M. Pichel, on the Continent, and others have made records of its use. During a period of 12 years (1885 to 1892), Hirsmen used eserine in his treatment of 312 cases of colic, and out of that number only eight proved fatal, whilst out of 119 cases treated without its use, 41 terminated fatally. Whether he uses the word colic in the strict sense, and only applies it to those cases of spasm of the bowels, with or without flatulence, or whether, upon the other hand, he has so designated every abdominal case that he treated, is not clear, but I should venture to think that he intended it to signify cases of the first description, for had he used eserine indiscriminately in all cases, I do not think that he would have had such a large percentage of good results.

Eserine acts directly upon the fibres of both voluntary and involuntary muscles, it increases peristaltic action, and forcibly expels the contents of the bowels, it does not materially increase secretion unless combined with pilocarpine. It is without doubt quicker in action than any other purgative, and where admissible its results are excellent. I have formed this opinion after having tried it in all kinds of cases. It is used in veterinary practice in the form of hypodermic, intra tracheal, and intra venous injections in horses, varying from one to three grains of the sulphate and hydrobromate, and is prepared in both solutions and tablets. It has not, however, found universal favour, and many practitioners deny its use in cases where, had its true action been understood, it would have been withheld. In cases of colic with prolonged spasms of the bowels, its almost immediate effect is most marked, the peristaltic movement being normally restored and pain relieved. In impaction of the colon with distension and inertion of the walls, it is likewise efficacious in bringing into action the longitudinal and transverse fibres and mechanically forcing the contents towards the rectum. The effect of pilocarpine is to stimulate glandular secretion, notably in the salivary glands. It is thought to exercise a similar effect upon the pancreas, and thereby cause an out-pouring of secretion from the glands into the intestines, so aiding in a mechanical manner the action of the eserine. The dose of physostigmine is given in some of our text-books as 1 to 2 grains. I have given the former dose in various ways, but never got any action from it. From 2 to 3 grains will usually act in from 25 to 45 minutes, in an ordinary case. Violent rumblings are at first heard, quickly followed by the expulsion of flatulence and fæces with considerable force. I have given larger doses with no untoward results, although violent expulsion of fæces and some degree of straining have lasted for some hours. If there is reason to believe that the impaction is dry and hard, pilocarpine 2 to 3 grains should be used in conjunction, as it will materially aid the eserine.

Before proceeding to use these remedies, a thorough investigation as to the cause of the attack and a proper examination of the patient should be made, otherwise we may have cause to regret their use. For instance, the following are a few amongst a number of conditions in which I should not advise their use: gastric impaction, acute gastritis, obstruction from calculi, hernia, volvulus, intussusception, and in enteritis. In gastric impaction I think it unsafe on account of the liability to cause rupture; the muscular walls are brought into such powerful action that, if the stomach be full, the contents

cannot pass through the pylorus fast enough, and rupture may result. They may also excite vomiting in gastritis and enteritis, and, in fact, where any inflammatory action is supposed to exist; they should not be administered in hernia, calculus, volvulus, etc., and in pregnant mares the reason why they should not be used is obvious. Of course, I am aware that it is frequently difficult to definitely locate the seat of obstruction and to determine the exact cause; but what I mean to imply is that eserine and pilocarpine should not be used where we have reason to suspect any of the foregoing conditions. It may, however, with safety be used in spasmodic and flatulent colic and impaction of the colon, and it is in the last-named affection that its good effects are most marked.

When I relied on aloes and other purgatives in the treatment of those cases, it was no uncommon thing to meet with instances in which there was no action of the bowels for two or three days after six drms. of aloes had been given, but since I have substituted physostigmine and pilocarpine I have had none of these protracted cases. I have records of two cases of impaction of the colon—one in March, 1889, and the other in October, 1890—where the bowels resisted the action of full doses of aloes and oil, the first for four days and the second for three days, but these cases were in cart horses, and were due to feeding upon coarsely-chopped straw with wheat and bean meal. In the first case laminitis supervened on the second day; both cases ultimately recovered, but were of long duration, the bowels being in an irritable state for some days.

As showing the difference in the results between this treatment and that by the use of physostigmine, I will give the record of a case which occurred in September of last year. On September 18th, 1894, at 4 p.m., I administered 2 grs. each of pilocarpine and physostigmine subcutaneously to a four-year-old cart gelding suffering from impaction of the bowels, with much tympany and severe pain. He had been standing in for a slight lameness, and had been over-fed upon coarsely-chopped wheat-straw and bean-meal. When I saw him there had been no passage of fæces for about seven hours. At 4.50 p.m. (50 minutes after the administration of the injection) there was a lot of rumbling immediately followed by a large amount of fæces and flatulence. During the next hour there were two more evacuations larger in bulk and much softer than the other; and between that and 7 a.m. next morning there were six evacuations, amounting altogether to an incredible quantity, and all traces of tympany and pain had disappeared. The only other treatment consisted of a few doses of chloral.

As to the various forms of injection, I have used them all, but generally adopt the subcutaneous. In some cases I have had the quickest action from the intravenous mode, but I do not think that there is much difference if the drug is reliable and the dose sufficient.

Nux Vomica.

The powdered seeds of the strychnos, nux vomica, may be termed a gastric intestinal nerve tonic. In cases of gastric impaction and obstinate constipation of the bowels, it is a most useful agent in combination with aloetic or saline purgatives. In the former condition, especially when the contents of the stomach are of a dry nature, from 2 to 3 drms. given with 5 or 6 drms. aloes in ball, has generally a very good result. Given in small doses along with vegetable bitters, such as gentian or ginger, it is very useful in maintaining a normal action of the bowels after the effects of a purgative have passed away. It is given in various doses, ranging from 30 grs. to 2 drms. according to the action required.

Having in the foregoing pages endeavoured to give the therapeutic action of the various agents named therein, and to a certain extent given some

indication of their use, I shall now proceed to point out certain things that should guide us in their selection for the treatment of these cases. It will be seen that their administration, without due regard to either their nature or action, cannot be attended with any but uncertain results. In the first place, it is necessary that we should proceed to ascertain the actual cause of the attack. For this purpose we should first carefully examine the animal by noting the position, state of the pulse, temperature, respiration, visible mucous membranes, state of the abdomen, surface temperature, and the nature of the excreta, if any. This is not, however, sufficient to warrant us in arriving at a correct diagnosis, and we should further ascertain something of the history of the case—the details of feeding and watering, and whether any recent changes in either; the number of previous attacks, if any; the times at which they have occurred; the nature of the work, and especially of the last performed. With a knowledge of these details we can then draw our own conclusions as to whether it is a purely accidental attack, or whether there is any predisposition to abdominal disease. For instance, if this is one of a series of attacks we may suspect calculus, and so on. Every attack has its predisposing and exciting cause or causes. Among the predisposing may be mentioned idiosyncrasies, diseases of the teeth, salivary glands, linings of the stomach, and intestines, whilst the exciting causes may be ravenous feeding, imperfect mastication, errors of diet, over engorgement with succulent or dry food, overwork and exposure to wet or cold, also the presence of irritant poisons. In all abdominal diseases, pain, restlessness, a perverted action of the bowels, are common features; but the varying intensity of these phenomena, associated with other symptoms, have to guide us in our diagnosis. Having formed an opinion as to the cause and nature of the illness, we must now proceed to treatment and to adopt such measures as are best calculated to restore the various organs to their normal condition. Nothing should be done hurriedly and without consideration. If an animal is in extreme pain, and has not passed fæces for some hours, we should not fly to aloes or physostigmine all at once, but carefully examine the patient, and by noting the features presented during such examination a proper treatment will suggest itself.

No matter what we do, we know that it is impossible to be always right in diagnosis and treatment, but bearing in mind the foregoing rules will materially help us. I also think that if more opportunities were taken of making *post-mortem* examinations, many errors which we commit would be avoided.

In conclusion, I must acknowledge quotations upon the action of medicines from the works of Mr. Finlay Dun and Dr. Mitchell Bruce, whilst abstracts from the reports upon the action of physostigmine and cannabis indica have been taken from various veterinary periodicals, viz., *Veterinary Journal*, *Veterinarian*, and *The Journal of Comparative Pathology and Therapeutics*. The principal conclusions, however, have been based upon personal observation and facts, and for which, if erroneous, I must accept the responsibility.

Discussion.

The PRESIDENT invited discussion on Mr. Green's paper.

Mr. GIBSON did not think many would be opposed to Mr. Green's arguments as a whole. He himself had not used much chloral hydrate with horses, but he had used it in the case of a cow with milk fever and he had found it very serviceable. He was a great believer in turpentine. In bowel affections, he used a great deal of mustard and hot water.

Mr. GREEN here pointed out that he had only been dealing with the medical part of the treatment, although he admitted that surgical treatment was necessary.

Mr. OLVER prefaced his remarks by saying that they had really very

little to discuss because Mr. Green had dealt with those drugs in a manner which they could not criticise. They all appeared to him to be useful drugs, and, so far as he could judge, Mr. Green had placed them all in their proper places. With the exception of Indian hemp, he had constantly used the bulk of them. There was one anodyne which had not been mentioned, and which was very valuable in cases of gastric irritation, and that was hydro-cyanic acid. He once tried to kill with it and cured instead, and since then he had used it very often. As regarded sulphate of magnesia, he used more of it every year he lived. They very frequently were inclined to use too large doses of purgatives or aperients where smaller ones would act equally well and with less drastic results, and in the case of nux vomica small doses repeated was often preferable to very large doses. As to physostigmine, at one time he used it extensively, and he still used it occasionally believing it to be a very valuable drug. He thought small doses were of no use whatever, and until he took to injecting intravenously he never had any satisfactory results; then, instead of having to wait 40 or 50 minutes, he got a result in 4 or 5 minutes. He had always thought that veterinary surgeons failed more in their knowledge of drugs than any other matter. It was one of the things they ought to study much more extensively than they did, but unfortunately after giving a dose they had to leave and could not watch the case as they ought. The so-called action of many of the drugs given in their pharmacopœia did not apply to their patients. The more they studied the question, the better for the advancement of the profession.

Mr. GOOCH, before attempting to say anything, had to thank Mr. Green for once more bringing before them the all important subject of gastric and intestinal mischief. There was one thing in which he hardly agreed with the essayist. He understood Mr. Green to say that in conjunction with four grains of morphia, he gave two grains of atropia. He (the speaker) had never tried it in such large quantities, and he should think that an excessive dose. His dose was from four to five grains of morphia and two-fifths of a grain of atropia. He had never had any good results from the use of aconite and he thought it a very dangerous remedy to use on any occasion, because they could not say at what strength they had their aconite. He was rather old-fashioned with regard to turpentine. He believed that in turpentine they had one of the best, if not the best therapeutic agent in the whole pharmacopœia in cases of intestinal trouble. He rarely ever went to a case without giving turpentine, but as a rule, before examining a horse, he gave him a subcutaneous injection of morphia and atropia. He agreed with Mr. Olver as to the value of sulphate of magnesia.

Mr. OLVER said he should like to ask a question which had hitherto escaped his memory. How was it that Scotchmen considered eight to ten drachms of aloes a dose, whereas Englishmen considered four drachms a dose.

Mr. BURCHNALL thought their first object should be to get an action of the bowels. His sheet anchor was physostigmine; he had used it ever since it came in. It was no use giving physostigmine after opium, and he had discarded opium altogether. If he used anything as a sedative, it was chloral hydrate. He was a great believer in turpentine. He never gave a sedative until he had given physostigmine. He administered it hypodermically, in grain doses only.

Mr. STANLEY thought stimulauts were often as good as any of the drugs they gave. As far as colic and inflammation of the bowels were concerned, he did not think, with the drugs at their command, that they ought to lose a single case. His practice was to give a dose of physic at once, and then assist nature by stimulants such as mustard and water. He thought the finest drug they had was chloral hydrate. It was rather expensive but it was the best thing they ever had.

Mr. CARLESS had very little to add to the discussion. He thought it was very necessary to find out the cause before administering physic. He believed the teeth was very often the chief cause of stomach trouble.

Mr. SLIPPER having offered a few observations,

Mr. CROWHURST agreed with the remarks of Mr. Carless, as to finding out the cause, as every case ought to be treated upon its merits. He was very fond of tobacco smoke enemas.

Mr. EDWARDS said he had been interested in Mr. Olver's question as to what constituted a dose of aloes, and he thought the answer which students gave depended very much if they had had private "grinds" with professors, and if so with which professors. Some professors would not give more than four drachms of aloes, whilst others would give six, eight or ten drachms. A man who had been in the habit of giving four drachms would hardly have sufficient courage to give a larger dose.

Mr. BURCHNALL said he had heard given as the reason that more aloes was given in Scotland to a dose than in England because the Scotch hay was so much coarser, and also much drier.

Mr. STANLEY thought the fact was due largely to the atmospheric conditions.

Mr. GOOCH attached a great deal of importance to the condition of the soil and the water.

The CHAIRMAN, continuing the discussion, said that, personally, he had to thank Mr. Green very much for coming there that afternoon in answer to his request for a paper. With regard to the value of the different agents for treating intestinal diseases, he quite agreed with those gentlemen who gave a dose of physic to begin with. He thought it saved a great deal of valuable time. He never thought of giving as little as four drams of aloes, unless to a pony. He believed turpentine to be a very valuable agent. There was one property of turpentine which had not been alluded to during the discussion, but which was an important one and should not be omitted. It was a very valuable antiseptic. With regard to sulphate of magnesia, the longer he lived the higher opinion he had of it; it was one of the most valuable medicines they had. Nux-vomica was an agent he had a great liking for. Physostigmine he did not use as greatly as some practitioners appeared to do, because when he had used it he had a large proportion of ruptures, which he had been bound to attribute to the use of that drug.

Mr. GREEN then briefly replied upon the discussion. He said the opinions expressed were just what he wanted. Mr. Olver was rather surprised he had not included hydro-cyanic acid in his list, but he used it as an ingredient in chlorodyne which he made himself. He agreed with those who attributed the largeness of the Scotch dose of aloes to the coarseness of the forage. He thought they might be a little too venturesome in giving turpentine in every case. As to the antiseptic properties of turpentine, it was an oversight on his part in not having alluded to them.

The HON. SECRETARY (Mr. H. J. Dawes) moved a vote of thanks to the President for his inaugural address, and asked him to allow it to be printed in full.

Mr. OLVER seconded the resolution in complimentary terms, and it was carried.

The PRESIDENT, in responding, thanked them very much for the honour they had done in showing so much appreciation of his efforts. He proceeded to propose a vote of thanks to Mr. Green for his interesting and instructive paper.

This was seconded by Mr. CROWHURST and carried unanimously, and Mr. GREEN having suitably responded, the proceedings terminated.

H. J. DAWES, *Hon. Sec.*

LINCOLNSHIRE VETERINARY MEDICAL SOCIETY.

A MEETING was held at the Angel Hotel, Peterborough, on Wednesday, July 3rd, 1895, Mr. T. A. Rudkin, vice-president, in the chair. The other members present were Capt. Russell, Grantham; W. H. Brooks, Leadenham; H. Kidd, Melton Mowbray; W. G. B. Dickinson, Boston; Gooch, Stamford; J. W. Gresswell and J. Mackinder, Peterborough; P. A. Clarke, March; A. Lennox, Crowland; T. Holmes, Bourne; and J. A. Robinson, hon. sec., Market Deeping. Professor Williams, Edinburgh; Rev. Peter Royston and Dr. Benson, Market Deeping, were present as visitors.

On the motion that the minutes of the last meeting be taken as read, Mr. Gresswell asked how it was that the report of the last meeting had not appeared as usual in the *Veterinary Record*.

The SECRETARY replied that he had used his discretion in sending the report of the meeting to the VETERINARY JOURNAL, when it was afterwards send to the *Record*. The editor of that paper replied that he was unable to publish anything that had appeared in a monthly paper, as the *Record* existed for the purpose of disseminating professional news as rapidly as possible. He (the Secretary) had observed, however, that this rule had not always been adhered to in the case of reports of other societies.

The minutes were then taked as read.

Letters of apology for non-attendance were read from Professors Penberthy and Axe, Dr. Fleming, Capt. Hayes, and Messrs. Hartley, Howse, James Smith, Santy, Freer, and others.

The SECRETARY said he had also received several letters from the secretaries of other societies in reference to the action of the Board of Agriculture, but as the matter had now been taken up by the Council they were laid on the table.

Captain RUSSELL said it gave him great pleasure to propose that Mr. T. A. Rudkin be elected president of the Society. They all knew the worth of Mr. Rudkin, he was always a good fellow whenever they met him, and he was sure they were prepared to appreciate his services to the Society by electing him president.

Mr. GOOCH said that no one regretted more than he did the death of their late president, Mr. Goodall, and he had great pleasure in seconding the election of Mr. Rudkin to the vacant chair.

Mr. RUDKIN was unanimously elected, and in returning thanks said he felt that the Society had done him a very great honour, he only regretted that it had been necessary to elect a president at that meeting. He would do all he could to further the interests of the Society.

On the proposition of Mr. ROBINSON, seconded by Mr. GRESSWELL, Mr. J. A. Clarke was elected vice-president in the place of Mr. Rudkin.

On the proposition of Mr. BROOKS, esconded by Mr. DICKINSON, Captain Hayes, Melton Mowbray, was elected a member of the Society.

Captain RUSSELL said that in accordance with the resolution passed at the last meeting he had forwarded £5 to the British Institute of Preventive Medicine.

Grunting an Unsoundness?

The SECRETARY then read the following letter from Mr. Howse, Lincoln:—

SIR,—I find I am unable to accept your invitation to the meeting of Lincolnshire V.M.S. at Peterborough to-morrow. I deferred writing until to-night hoping I might definitely say "yes" because I wished to take the opinion of the members present on a question that is somewhat important to examiners of horses.

It has been said by two high authorities in London—whose names I cannot use, because private was marked on a reply letter—that horses that "grunt" at the stick or when ridden are held by them to be sound in the wind if unaccompanied with roaring or whistling.

This is not generally accepted, and I for one dispute its correctness—because :—

1. Sound horses do not grunt.
2. "Grunters" almost invariably become roarers or whistlers.
3. There seems to be some affinity between the two conditions—grunting and roaring or whistling—by both being frequently found existing together, and so far as my experience goes, not in association with "broken wind."

I mean to ask Mr. Hunting to ventilate the question, so that it becomes settled one way or other. Messrs. Tattersall say it is a question for the veterinary profession, and truthfully so, and a settlement ought to be arrived at.—Faithfully yours,

HENRY HOWSE.

July 2nd, 1895.

Some discussion followed, and it was very much regretted that want of time did not allow the matter to be fully gone into at that meeting, but most of the members appeared to have the same views on the subject as those stated in the letter.

Mr. LENNOX proposed that the matter be adjourned to the next meeting, and that Mr. Howse be requested to bring forward the subject at that date. This was seconded by Captain Russell and adopted.

Votes of Condolence.

The PRESIDENT said it was with very great regret that he rose to propose that a vote of condolence be passed on the death of their late president, Mr. Goodall, whose loss they all so deeply deplored. He was a man of great ability and sterling worth, and they little thought at their last meeting that they would never see him again. He was always "Hail fellow well met," jolly good company, and a good friend to his profession. In the interests of science, he asked that a *post-mortem* examination should be made of his body, and there was no doubt his death was caused more or less by his unluckiness. He had a very bad fall some years ago, and was also struck by a foal, and it was never thought that he could possibly get better. He deeply regretted they had lost him as president. It would be very difficult to replace him ; he was a man highly thought of, both by his clients and his professional friends. They would all recollect the excellent address he gave them when he became President of the Society. He proposed that they send a vote of condolence from the Lincolnshire Veterinary Medical Association to Mrs. Goodall on the death of her husband, their late President.

Captain RUSSELL said he should be glad to second the resolution. Mr. Goodall had been known to him ever since it had been his privilege to settle down amongst them, now some 23 or 24 years ago. He had always found him what he particularly esteemed in a man—he was perfectly straightforward. He was as straightforward a man as ever walked this earth. He came of a good stock, was always looked up to in his profession, and they all regretted he had passed away from them. He thought it was due to his widow that they should express their regret at his loss.

The resolution was unanimously adopted.

Mr. GOOCH said there was another letter of condolence which should be sent. They all regretted the death of their late member, Mr. Thomas Greaves, of Manchester. He well remembered when Mr. Greaves was President of the Association, that he did a good deal for them. No man in the profession had done more for the spread of veterinary friendly meetings than Mr. Greaves. He proposed they send a vote of condolence to his nearest relative.

Mr. MACKINDER seconded and said when he (the speaker) was president of the Society Mr. Greaves was one of the best friends of the Society, and supported them on every occasion.

Professor WILLIAMS said he had had the privilege of meeting Mr. Greaves at many of these meetings all over the country and no man took more interest

in such institutions than Mr. Greaves, not only in England, but in Scotland. He had not only met him in Scotland but at the North of Ireland Veterinary Association. He was a devoted and enthusiastic member of these Societies because he believed they promoted not only an increase of scientific information but good friendship among members of the profession. He worked hard all his life, and he thought it would be a graceful thing to send a letter as suggested.

Jubilee Memorial Fund.

With regard to the proposed subscription to this fund Mr. GOOCH said he thought this was a memorial to which every veterinary surgeon ought to subscribe, and he thought they would be out of place as a Society if they did not subscribe out of their funds. He believed they would be the only Society that had not sent in a subscription, and he did not think they would miss the amount he proposed at the last meeting at Grantham. He should propose that £5 be sent.

The PRESIDENT asked definitely what was to be done with the money.

Mr. GOOCH said it was definitely settled that it should form a bursary or scholarship open to all the colleges.

Capt. RUSSELL thought that if it took that form it would be of interest to them. He thought they ought to commemorate the action of those men who had the pluck to form the profession, and if the contributions were put into the form of a fund as described by Mr. Gooch, it would be a very good thing. He had heard other suggestions as to a medal to hang on the watch chain, and that kind of thing, which he thought useless.

Mr. GOOCH thought Capt. Russell might be thinking of the Steel Memorial Fund, in connection with which a medal was to be given.

Capt. RUSSELL said he understood it was to place effigies of these men who had formed the profession. He finally seconded Mr. Gooch's proposition that £5 be sent from this Association. Carried *nem. con.*

Texas Fever.

Professor WILLIAMS then read an interesting paper on Texas Fever.

The PRESIDENT said he was sure they were all very much obliged to Prof. Williams for his paper. They knew there was a large amount of American cattle brought into England, and some day they might be busy with this Texas fever, but he thought it might be modified by some protective inoculation in years to come.

Capt. RUSSELL asked whether, since it appeared that a tick was the cause of the disease, steps had not been taken to prevent the spread of the disease by external dressing, with a view of killing the parasite. He should also like to ask the Professor whether it had been proved beyond doubt that this parasite did not exist upon Northern cattle before they came upon the ground that the Southern cattle had been upon.

The PROFESSOR said he had no doubt the method of procedure would be to destroy the ticks on the Southern cattle before they travelled North. That seemed to be the common sense view of the matter. If they could do that there would be no danger whatever. He thought it had been proved that the Northern cattle were not affected until they came upon the pasture of the Southern cattle. He had had some experience with the tick, and had proved that what they called "trembling" in Scotland was due to inoculation by a tick. He described the method by which he discovered this, and said the experiment had failed in one particular, but he meant to conclude it this year. In answer to Mr. Holmes, the Professor said the disease had been induced by the cultivation of the bacteria.

After further discussion the President proposed a vote of thanks to Pro-

fessor Williams for his interesting paper, and expressed the hope that this was not the last time he would visit them.

Professor WILLIAMS, in reply, said he was always glad to do anything he possibly could for the benefit of his profession. It was the only profession he had ever loved, and he had devoted a fairly long life to it, and he was still able to study the new phases of scientific thought. He was fond of doing this, and he read a great deal, as he was obliged to do to keep abreast of the new discoveries that were continually being made in the world of medicine. He was very pleased if he had been of any service to them.

Mr. HOLMES displayed a very interesting specimen of a dilated œsophagus, which was afterwards presented to the museum of the New Veterinary College.

The meeting then concluded with a hearty vote of thanks to the President for his conduct in the chair, and the members afterwards dined together, the usual loyal, patriotic, and professional toasts being duly honoured.

J. A. ROBINSON, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE Quarterly Meeting of this Association was held at the Grand Hotel, Manchester, on Friday, July 5th. The President (Wm. Dacre, Esq.) in the chair. About 20 members and friends were present, among whom were the following:—Dr. Delépine, Messrs. J. B. Wolstenholme, Alec Lawson, R. Hughes, Munro, Wm. Woods, Ackroyd, Laithwood, Faulkner, R. C. Edwards, Ferguson, Jos. Hall, Wm. Hall, F. B. Pearson, E. E. Wood, E. Gubbins, and H. D. Chorlton (Secretary).

The minutes of last meeting were taken as read, upon the proposal of Mr. ALEC LAWSON, seconded by Mr. E. FAULKNER.

The SECRETARY read a letter from the Eastern Counties Association, thanking the members of the Lancashire Veterinary Medical Association for their support of Mr. William Bowers' candidature.

The SECRETARY read letters of regret for non-attendance from Mr. W. A. Taylor, Professors McCall, McFadyean, Penberthy, &c.

Mr. FAULKNER proposed that Mr. King, M.R.C.V.S., Manchester, be elected a member of the Association. Mr. WOLSTENHOLME seconded the proposal. This was carried unanimously.

The PRESIDENT wished to say a few words on the deplorable loss this Society has sustained in the death of Mr. Peter Taylor. His connection with the Society was of the happiest, and we have still before our minds' eye his genial presence. We still hear his ringing voice in vigorous and emphatic denunciation of wrong, or raising the sympathies of his listeners when speaking on the subject dearest to his heart, that of the Benevolent Fund. These memories, gentlemen, will pass from us like a dream, but Mr. Peter Taylor has left us something more substantial to keep his memory green. He has handed down to us the example of a professional man, loyal to his colleagues. Mr. Taylor was one in whom every confidence could be placed, and in consultation, his straightforward and unhesitating opinion was of great comfort and support in difficult cases. Many honours have deservedly fallen upon his shoulders during the past, and no man, from a political point of view, has been more useful to this Society and the profession generally than Mr. Taylor, and I am quite sure he had always the very utmost confidence of this Society. To conclude, I ask you to mourn with me the loss of a valued member of the Society, a genial companion, and an ornament to his profession. In addition, I would ask one of you to rise and propose that a letter of condolence be written to his family, and, moreover, that this letter should be

something rather more than an ordinary letter, that it should be in the shape of an illuminated vellum letter of condolence. Mr. Taylor has left a large family, and such a memento of him would, no doubt, be prized by them in future. Gentlemen, with these views I hope you will carry out the suggestion I have made.

Mr. FAULKNER: I desire to second our president's proposition, and should not like this occasion to pass without paying my tribute of respect to the memory of the late Mr. Peter Taylor. For some twenty-five years I had the privilege and pleasure of knowing him, and feeling that in times of difficulty he was ever ready to afford a sympathetic hearing and render genuine professional support. I am sure that we, as also the members of the veterinary profession who are not of this association, but had the benefit of his acquaintance, regret the necessity which has arisen for us to do that which we are now doing; but of him it may fairly be said "by precept and example he did his duty as a professional man, and undoubtedly left our profession better than he found it," and, to my mind, no greater tribute can be paid to his memory than to know and say that he did what was right and proper by his fellow-practitioners, as also the profession at large. He was a man rich in sterling honest principle, and there is no room for doubt that what our President has said is the truth, to which one feels a pleasure in testifying, and expressing regret that our old friend should have been cut off only too soon, and left us the poorer in consequence. I wish to associate myself with the President's suggestion, that a letter of condolence, engrossed on parchment or vellum, be sent from this association to the widow and family of the late Dr. Peter Taylor, as an evidence of our respect for his memory.

Mr. WOLSTENHOLME said, for some time past, it has been borne in upon me the fact that we have a great lack of practical papers and an exhibition of specimens at our meetings, and also in the other veterinary medical societies. It has occurred to me that if this (the Lancashire Veterinary Medical Association) could approach the Yorkshire, and say we will set aside two extra meetings in the year, the one in Lancashire (Manchester), and the other in Yorkshire (Leeds), that it should be distinctly understood that practical speaking be limited to ten minutes, I think if this could be done, it would break up new ground, and add new interest to these societies. What with being mixed up with political and other meetings, the practical and pathological get pushed into the background.

Mr. ALEC LAWSON, in supporting, said Mr. Taylor had acted towards him more like a father than anything else. He always had an agreeable manner, especially in consultations with him, and he always took the opportunity to help you in difficulties. He said he and all the members would miss him very much.

Professor DELÉPINE then read a most interesting and instructive paper on "The Prevalence of Tuberculosis in the Domesticated Animals," *e.g.*, cattle, horse, pig, sheep, goat, dog, cat, and birds:—

The Professor, after alluding to the large number of vertebrates which are liable to tuberculosis, explained that he would limit his remarks to the prevalence of tuberculosis among those mammals which have been domesticated. The fact that tuberculosis was frequent among domestic animals is of importance, not only because the flesh and milk of several of these animals are used for food by man, but also because many of them come in more or less direct contact with man in farms, in towns, and even in ordinary dwelling-houses. For if it is well proved that dried and pulverised tuberculous products of human origin can infect the lower animals when mixed with the air they breathe, it is not less probable that the reverse is true.

The lecturer did not, however, wish to discuss the question of transmissibility of tuberculosis from man to the lower animals, and from the lower

animals to man, a subject which he thought was well understood now, and on which he had previously lectured before the Association. Among the mammals living in our midst, several have for a long time been supposed to be refractory to tuberculosis, *e.g.*, the horse, the goat, the dog, and some others. This immunity is, however, more apparent than real, and may in most cases be explained by one or the other of the following three circumstances :—

1st. Some kinds of animals by their mode of life are more exposed to infection than others, thus cows kept in ill-ventilated byres in towns are much more exposed to infection than sheep or goats living in the open.

2nd. Some animals respond to the experimental tests of inoculation differently from what others do. Thus subcutaneous inoculation gives rise to tuberculous lesions more easily in the guinea-pig than in almost any of the other animals which are also liable to tuberculosis.

3rd. For different animals tuberculous lesions affect different types and distribution. It is only necessary to mention the differences observable in the horse, cow, and pig, to show the importance of this as a possible source of error, especially in days gone by.

The following statements referring to the prevalence of tuberculosis in each kind of domestic animals are based partly on statistics chiefly collected for public purposes by observers such as Jölme, Ostertag, Bang, Lydkin, Arloing, Nocard, McFadyean, &c., and partly on observations made by the lecturer in the last few years, during which he has been able to see instances of non-experimental tuberculosis in most of the domesticated animals.

Cattle are, with man, the mammals the most liable to tuberculosis.

By putting together a few of the figures collected in England, France, Germany, Denmark, and Holland, and giving the number of tuberculous animals in over 600,000 heads of cattle, it is found that over 16 per cent. were affected. One is certainly not far wrong in saying that out of every 10 cows one or two are certainly tuberculous. Yet this statement must be qualified, for there are districts in which tuberculosis is almost absent, whilst in others it is so prevalent that a non-tuberculous cow is the exception. This is specially true of large towns, where milch cows are often kept in infected dairies. In such dairies three to six, seven, or even eight cows out of ten are tuberculous, statistics to that effect have been collected not only in France and Germany, but also in England and Scotland.

The ways in which these cows become infected are evident enough if the distribution of the tuberculous lesions are kept in mind. The air passages and the alimentary canal are undoubtedly the paths through which the bacilli generally penetrate into the organisms, either with contaminated air or with contaminated food. Infection through the genito-urinary tracts, the udder, the skin, though possible, is undoubtedly of rare occurrence.

It is evident that infection in most cases takes place after birth, the supposed share of heredity is now more than doubtful. Nothing is more convincing in this respect than the statistics relating to the prevalence of tuberculosis in calves. From returns obtained chiefly in Germany, Denmark, and France, and based on the examination of more than $2\frac{1}{2}$ millions of calves it may be said that not more than 0·03 per cent. are effected, *i.e.*, that not more than three calves out of 10,000 are tuberculous. From certain statistics collected in Saxony it is evident that however small the number of tuberculous calves is, that number is gradually increasing.

Swine are not generally supposed to be very liable to tuberculosis, but we have more and more evidence to show that this is not quite a correct impression. Most German returns show that at least one pig out of every 100 is affected with tuberculosis, and in some cases one pig out of 60. In Saxony the percentages were in 1891, 1·07, in 1892, 1·37, and in 1893, 1·64, a gradual increase similar to that which has already been noticed in connection with

cattle. By putting together statistics collected in Germany, Holland and France, and relating to nearly one million pigs, one gets a general percentage of 0·85, but some of the percentages given, especially in France, are suspiciously low. By adding to these figures some German and some unusually high Danish returns, quoted in the Report of the Royal Commission on the effect of food derived from tuberculous animals, a higher percentage is obtained, viz., 2·75, based on the examination of nearly one and a half million pigs. From this it would appear that one pig out of every 36 pigs is tuberculous. If it is remembered that in certain countries much pork is eaten salted or smoked, but uncooked, the importance of tuberculosis in swine will become apparent, for neither smoking or salting can be relied on for the destruction of the tubercle baccillus. In the pig the infection generally takes place through the alimentary canal. Young pigs fed on tuberculous milk or other tuberculous products are extremely readily affected, as proved by several experimenters since Chauveau in 1868, a result entirely confirmed by Dr. Woodhead and Dr. Sidney Martin. Hence the danger of throwing to the pigs uncooked tuberculous milk or offal as is not unusually done. Nocard believes that 9 out of 10 cases become infected through the alimentary canal. This is supported by the distribution of the tubercular lesions which affect chiefly the whole of the lymphatic ganglia connected with the alimentary canal from mouth to large intestine. The liver and spleen are generally affected, but the serous membranes are much less affected than in cattle. The lungs are often riddled with miliary tuberculosis, a result of general infection. Calcification of tubercle is much less frequent in swine than in cattle. Chronic affection of the glands of the neck and of the bones give rise to what has been described under the name of pig's scrofula.

In the Horse numerous instances of tuberculosis have been put on record, yet the animal used to be thought to possess a special immunity against tuberculosis. There is no sound basis for any estimation of the percentage of horses affected. From the way in which the thoracic and the abdomina organs are affected it seems certain that infection may take place either through the air or the food passages. But the baccillus must generally enter the body through the alimentary canal. What is specially remarkable about tuberculosis lesions if in the horse is the extraordinary proliferation of lymphoid tissue which is associated with them. The appearance of the spleen is also characteristic, and before the true nature of those lesions was recognised they were supposed to be lymphadenomatous. In some of these lesions the number of tubercle bacilli is at times extremely large. It is interesting to note that in the disease called lymphadenoma, lesions resembling closely those produced by tuberculosis in the horse are observed, but here tubercle bacilli cannot be demonstrated in ordinary cases by the usual methods. There is ground to believe that tuberculosis is more frequent in the horse than it used to be, and this is probably connected with the custom which has become prevalent in some districts of bringing up foals on cows' milk.

In the Sheep tuberculosis is undoubtedly rare. Taking the Danish and German statistics as guides, it would appear that not more than 11 sheep in 10,000 can be expected to be tuberculous under ordinary circumstances; in fact, this figure is too high, owing to the probable errors caused by various pseudo-tuberculoses. The proportion attacked is usually much smaller than the one just given, probably seldom above three in 10,000, and often much less.

The Goat, the supposed special refractoriness of which is taken as the basis for a method of serum-therapie for tuberculosis, has now been found not to be immune. Not only can it be infected experimentally, but several instances of non-experimental tuberculosis have been described by several observers;

one case examined by McFadyean has been on record for several years now. In several instances the tuberculosis has been acquired by cohabitation with tuberculous cows or feeding on cows' milk.

Instances of tuberculosis in the Dog and Cat are becoming more and more frequent in our pathological records. These animals undoubtedly often become infected owing to their living in the houses of tuberculous human patrons, but in town they may become dangerous to those who make pets of them, and specially to children.

Regarding tuberculosis in Birds, the speaker brought forward the importance of not being too much impressed by the difference between avian and human tuberculosis. We had to deal here only with varieties of the same bacillus, and as we know little of the conditions under which the tubercle bacillus lives saprophytically, it is impossible to tell at present whether the avian tubercle bacillus may not at times become a source of danger to man. The facts that in some poultry yards tuberculosis spreads rapidly and that when the disease has occurred once it is difficult to eradicate, show that avian tuberculosis is a very contagious disease. In conclusion, the speaker pointed out that domesticated animals constituted a breeding ground for a bacillus which was one of the most dangerous enemies of human life.

Recent observations showed that there was a tendency towards an increased prevalence of tuberculosis amongst these animals. Meanwhile, it is evident that considerations of mere economy cannot much longer prevent the State from dealing actively with such a glaring danger. It was fortunate, under those circumstances, that veterinary surgeons should have been called upon to assist medical officers of health in the inspection of animals used for food. The special knowledge which a veterinary man could bring to bear on such questions should make it possible for us to arrive before long at a correct estimate of the magnitude of the danger to which we are exposed through tuberculosis. This should be known, not only in a general way, but accurately in each district, and to the veterinary profession we are bound to look for the information still wanted.

The PRESIDENT said with regard to tuberculosis in horses, he supposed it was not very long ago that veterinary surgeons thought that horses were not subject to it at all, but hearing Dr. Delépine's remarks, it was probable that foals feeding on milk from cows became contaminated in that way. He said he knew a district (the Fylde district) fifty miles from Manchester where cows were regularly used for that purpose. With regard to the cat and the dog, it seemed to him that the former was more subject to tuberculosis than the latter. He had seen the disease for years in hens. He was sure the subject would open out a discussion very valuable, and concluded by asking some of the members to say something about it.

Mr. EDWARDS remarked that he had listened with great pleasure to Dr. Delépine's interesting paper but was rather astonished to hear from the essayist and the president respecting feeding foals on cows' milk. If a mare died the foal was fed on milk—cows were kept purposely to feed foals with the milk.

Mr. FAULKNER : Permit me to congratulate the members of this association, myself amongst them, on the great favour conferred upon us this evening by Dr. Delépine giving such a very interesting and instructive address. One or two points struck me forcibly. It is quite evident we now know far more as to the extent of the ravages of this disease (tuberculosis), also that it is very much on the march or has hitherto frequently gone undetected, and without a doubt, as was expressed in such a nice manner by Dr. Delépine, it is only by the combined working of the two professions that we can hope to gain the necessary further information thereon. With regard to the dissemination of the disease in different animals, I have during the last few years been rather

at a loss to account for the number of cases occurring in equines, whether it is the fact that the disease is on the increase or in the past been unrecognised, for I well remember many years ago, when travelling with a number of my professional *confrères* to a meeting of the Yorkshire Veterinary Medical Association, a discussion as to whether tuberculosis affected the horse and the general opinion was, it did not. Some five years ago I described about half a dozen cases in the *Journal of Comparative Pathology* and since then have seen an average of three to four yearly and no later than last week had one. Dr. Delépine's researches as to the mode of infection are of great interest and likely to prove of practical benefit, for in my opinion the feeding of foals on cows' milk may be largely responsible to its use as is not at all uncommon for the bringing up of equines. With regard to its slow development, as mentioned by Mr. Edwards, he having only met with it in aged animals, this may perhaps be accounted for to some extent by the system now in vogue of nursing sick horses on milk. I have had cases sustained solely on it for a period of three weeks when suffering from exhausting and debilitating diseases and recover, but latterly the milk is given after being boiled. Most of the cases of equine tuberculosis as seen by me have also been in aged animals. It is most instructive, as mentioned by Mr. Wolstenholme, to visit the abattoirs, and I think we have done some good this evening by introducing to our association as a member, Mr. King, the Veterinary Inspector to the City of Manchester, for I have no doubt he will be a help to this association. Our profession and Dr. Delépine work, in preserving morbid specimens and the keeping of statistics: and by way of doing something myself, I intend from this time forward to keep statistics. One feature observable in tubercular disease is that you may see an animal of a certain age and sex the subject of generalised tuberculosis and yet to all external appearance the picture of health. I once saw at our abattoirs a two-year-old Scotch bullock the carcase of which was prime and beautiful to look at and handle, but a worse case of generalised tuberculosis I never saw. As one means of checking the spread of this disease I took to the use of tuberculin, and am happy to find it is being now used by a friend of mine amongst pedigree stock just as mallein has proved to be of the greatest service, and almost a Godsend to practitioners who have to deal with glanders and farcy. Just one point "alluded to by Dr. Delépine as to milch cows and the statistics of the disease where they are kept in over-crowded situations, and under general bad sanitary conditions, such as applies to large towns, viz., the large percentage affected," and it is the very great drain on the animals by forcing with brewers' grains and heavy milking rendering them more susceptible subjects. I feel very much indebted to Dr. Delépine for his kindness in coming here this evening and favouring us with such an admirable and instructive address.

Mr. R. HUGHES thanked Dr. Delépine very much for the practical way in which he had introduced his subject. He had no doubt tuberculosis had often been confused with lymphadinoma. Feeding foals on cows' milk was very common in breeding districts. In his district they had two important associations hiring very good shire horses every year. For show purposes it was a common practice to give cows' milk to foals as soon as they were able to do with it. He quoted an instance of a cob at the Shropshire and West Midland Show which took the first prize. After the show the allowance of milk was discontinued, and the cob began to lose flesh and soon afterwards died. Upon *post-mortem* he thought it had died from lymphadinoma but now he had no doubt it was from tuberculosis, in consequence of becoming infected through the cow's milk. In conclusion, he was very much obliged to Dr. Delépine for bringing this important paper before the society.

Mr. LAITHWOOD: I cannot resist giving my testimony to the very excellent

paper given to us this evening by Dr. Delépine. I have been for some time considerably interested in this disease (tuberculosis), and, living as I do in a very great dairying neighbourhood, we have a considerable quantity of it amongst us, and I am sure I agree very considerably with everything Dr. Delépine has this evening told us with regard to it. I am certain that it is the most important of all the diseases we have to contend with, and is undoubtedly, in my mind, causing more harm than anything else that we have to do with. I think the danger attending it with regard to the consumption of flesh, and also from the use of tuberculosed milk, is untold. No one can tell the amount of mischief daily through the consumption of the flesh, which, in my belief, is unfit for human food, and I am very strongly of opinion that not one ounce of tuberculosed flesh, either from animals, birds, or from any source, should ever be used for human food, and not only that, the milk from tuberculosed animals ought not to be used for human consumption. I see the public have been pressing to be protected against this enemy, and they ought not even to be allowed to buy, or have the chance of buying tuberculosed meat or consumptive milk, and I think from this association, or from some other, or some reliable body of men, some resolution should be put forward, and in my opinion this disease ought to be scheduled under the Contagious Diseases Act. I think some suggestion with regard to the injection of tuberculin, which is, I firmly believe, one of the grandest tests that we have with regard to the disease, that the disease may in some future time be almost exterminated from the country. With regard to tuberculin, I have myself made some experiments with it, and I can speak most highly of it from the experiments I performed. By different operations during the last twelve months I have ascertained that from 120 animals that showed a rise of temperature, on slaughter 115 were found to be tuberculosed, and I think this is a sufficient percentage to guarantee the use of tuberculin in all suspicious cases; and not only for suspicious cases, but I think every animal ought to be tested, and thus rid the country of the disease. I am sure I heartily thank Dr. Delépine for the admirable paper that he has given to us, and trust that some practical results may come of it.

Mr. WILLIAM WOODS: With regard to the animals affected, I think the experience of every veterinary surgeon will agree with Dr. Delépine not only of course that the cow is the most affected (that will be agreed upon), but that pigs are affected to a very considerable extent with tuberculosis, and one breed in particular (the Tamworth) of pigs; the amount of tuberculosis in that breed is very considerable indeed, in my experience. With regard to the mode of infection, too, of pigs, I had a little time ago a very good example of infection through the ingestion of tuberculous matter. A butcher in the town in which I live had about 10 or 12 pigs, all of different ages, and these pigs were turned out on to his manure heap. I may say he was a low class butcher who dealt considerably in low class meat, and every one of these pigs became affected with tuberculosis, although the ages and breeds of the pigs were different, proving to my mind that they had contracted the disease in the yard of that butcher, because it would not be very well supposed that all those pigs, which were of different breed and different ages, should each of them be the subject of tuberculosis when the man bought them. The horse I have certainly found to be tuberculosed, as all veterinary surgeons have, on several occasions, but not a great number. I have found in these cases that the skin perhaps, the spleen, and the vertebræ seem to be affected. In almost every case of tuberculosis in the horse, the animal has wasted and disease of the spleen has been suspected, the neck has gone quite stiff, and *post-mortem* has shown considerable disease of the neck of the animal. I have also seen two well-marked cases in which there can be little doubt but that the human being can become affected from the lower

animals. I was asked to call and see a cow that was reported suffering from pleuro-pneumonia, but when I got there it was in the last stage of tuberculosis with considerable tuberculosis of the udder. Some twelve months after the owner of the cow came to me and asked me what was the matter with the cow. I told him it was consumptive. He said, "Do you think it is catching? My lad is dying of consumption, or dead of consumption." This lad had been particularly fond of milk, so much so that this cow had been bought for him, and he had drunk milk from this tuberculosed cow—from three to four quarts a day—and within twelve months of the death of the cow, his lad was dead also from what the doctor called acute consumption; so I think that there it showed tuberculosis from the lower animal to the human being. The prevalence of tuberculosis in town byres cannot be overstated. Whenever I go into a town byre round us, and am called to a case of a cow with any lung affection, my prognosis is always exceedingly guarded that she will get better if not tuberculised. That is about my feeling in many cases when I am called to them. I think the fact, and I suppose it is accepted as a fact, that tuberculosis is purely a contagious disease, and that it is not hereditary, except in so far as certain constitutions may form a suitable soil for the growth of the bacillus—that fact seems to me to point to tuberculosis going under the head of preventible diseases, and that being so, I think that the leaders of pathology in this country ought to unite and ought to impress upon the Government that tuberculosis is a preventible disease, and I know that veterinary surgeons have been crying out and endeavouring to persuade the Government to schedule tuberculosis under the Contagious Diseases Act to stamp it out; but the veterinary profession has been a weak and unimportant profession, and it has been "the voice of one crying in the wilderness." Some four years ago, when as the President of this Association, I arranged a joint meeting of veterinary surgeons and medical men, because I felt that we, as veterinary surgeons, along with medical men, had laying upon us a very great responsibility when we are aware that thousands of people are dying from a preventable disease, and that in all probability, that preventable disease was being produced by the animals which were committed to our care. I say that although we have tried to do that, our efforts have not been successful; but I think those efforts, if they were backed up by the medical profession and the leaders of pathology, who would point out that, while a man was hung for murder, the Government is permitting, by its want of legislation, thousands of people to die when, probably, they might, merely as a matter of £ s. d., save thousands of lives; and that there are sins of omission as well as commission, and that, perhaps, if it could be brought home to the Government the great responsibility which rests upon them in not legislating to endeavour to reduce this disease, we should have spent, many of us, our lives in very useful efforts. I thank Dr. Delépine for one of the most practical papers, which, I think, gives more food for thought, and which certainly proves that the experiments of the scientific pathologist exactly agree, I think, with the experience of the every day practitioner. That was the feeling I had when I heard Dr. Delépine's remarks.

Mr. WOLSTENHOLME: It will be well within your memory, gentlemen, that a few years ago on the appointment of a Medical Officer of Health, this Society called a meeting and arranged for a presentation to be made to the Manchester City Council on the subject by having a Veterinary Officer attached to the Health Department. It was a revelation to us that so little importance seemed to be attached by the members of the City Council to the value of a veterinary surgeon in connection with the health of a community. In course of time Manchester has at last appointed a veterinary surgeon to serve it in connection with its meat supply. A revelation it has been to me to go round the abattoir with the Veterinary Officer and see the amount and

variety of tuberculosis there to be found. He said himself it was a revelation to him to find the great prevalence in the Manchester market of tuberculous udders—he showed me two such udders at the time, also two tuberculous kidneys. The relationship of this association with the medical profession in this district has now been for some years a bright one and I think is bearing good fruit to both professions. The way in which we are received by the medical profession, in the open door to their Pathological Society, and the way in which post graduate medical study may be taken up by the veterinary surgeon is very pleasing and is producing good. I do not know whether any of you have read a paper of Dr. Delépine's which was published in the *Veterinary Record* which carries the subject of tuberculosis further. As with the lay members of the community, so I think there has been a considerable want of appreciation in the medical profession with respect to the distribution of tuberculosis. It is only this year that an article in the *British Medical Journal* by an American doctor quoting some new cure for tuberculosis through blood serum of the horse, it was stated that the horse "was immune to tuberculosis." I am surprised that a medical man of authority could make such a mistake after all the public records to the contrary, and am surprised that it should find its way to the *British Medical Journal* uncorrected. That, I think, points out something of the want of appreciation and want of knowledge on the part of an ordinary surgeon in connection therewith. The paper which I referred to by Dr. Delépine carries the subject further, for recently there has been a very divided opinion between medical men as to whether the flesh of tuberculous animals was likely to convey infection to the human subject. Experiments which have been made in this direction have been so performed with the flesh, and the flesh only, of such animals, it would seem that if you carefully give an animal simply muscular tissue without lymphatic glands, you are not likely to produce tuberculosis by ingestion; but if you give flesh and lymphatic glands from tuberculous animals, you quickly produce tuberculosis. All meat sold by the butcher for human consumption is sold flesh, and fat, and lymphatic glands. I have very little doubt that tuberculosis is also widely disseminated by the diseased udders which are supplyiug milk for the consumption of children. I think that, even in this district, there is an advance in the knowledge of tuberculosis, and a distinct appreciation of the value in which a veterinary surgeon may help the medical officer of health. It is a matter of pleasure for me to know that a veterinary surgeon, Professor Nocard has been named to us as an authority on tuberculosis. Like other men, I have thought something over the question of the heredity of tuberculosis. I have simply been overwhelmed by the statistics which appear against the probability of such. Another point which is very interesting is the use now made In determining a diagnosed or suspected tubercle by inserting a little portion of diseased tissue under the skin of a guinea-pig. In conclusion, I wish simply to re-echo Mr. Woods' opinion that Dr. Delépine's paper is one of the most practical of practical papers that we veterinary surgeons could have, and to add my expression of thanks and gratitude to the doctor for having given it to us.

Dr. DELÉPINE, in responding, said he had been rather surprised to hear the members speak so favourably of his paper, as he had expected nothing but criticisms upon it. He was not prepared to hear that hens in this country were afflicted with tuberculosis to such an extent, and this was information which was new to him. He said Mr. Wolstenholme had undoubtedly touched upon a very large number of important points, and as Mr. Wolstenholme agreed with him in a great many of them it gave him considerable satisfaction. Regarding Mr. Faulkner's remarks that old horses were frequently fed on milk when ill, he was not acquainted with this fact. He had obtained information from the members which would make a great many difficult points easy. The

drain on milch cows must have considerable influence with regard to tuberculosis. As to cows being sent to town after they had already contracted the germs he thought this was a very ingenious idea but he did not think it would account for the fact that cows become infected in certain byres and not in others, and that in certain byres the cows which are in close contact with tuberculosed cows became more rapidly infected than those which are not in immediate contact. The older a cow is the more likely it is to be infected. In Paris cows are now kept for about a year only, and since that arrangement the cows sent to the slaughter-houses have very seldom been found to be tuberculosed. It was gratifying to him to have the entire support of Mr. Laithwood, who, on account of his position, was undoubtedly able to speak on this very important matter. There was no doubt that what was wanted was the scheduling of the disease under the Contagious Diseases Act. This was a requirement which had been demanded for a long time by the veterinary profession, and also by a great number of the medical profession. He thought it was more the fear of incurring considerable expense to the State that the Government did not comply with the demand of the professions. He quite agreed with all Mr. Laithwood's remarks as to the efficacy of tuberculin. Nocard, in France, and Layton, in Germany, have insisted on the same fact that tuberculin is an extremely important agent in diagnosing tuberculosis. What Mr. Woods said about the especial liability of the Tamworth breed of pigs to tuberculosis was entirely with what Nocard had said—that precocious kinds are very much more liable than other kinds. About the infection of the vertebræ—that is, the presence of tuberculosis in the bones and the spleen, confirmed what had been seen in the case of the pig, because when infection takes place from the alimentary canal the throat, the tonsils, and the mucous membrane became infected. The bones of the vertebræ are extremely liable to become infected. It is extremely remarkable that Mr. Woods should have noticed it from practical observation. As to the action of the Government it must be remembered that the advisers of the Government were not free agents. They were allowed to speak but the Government acted and did what it liked, and when a report was inconvenient it was simply shelved. He thought the influence of the medical profession in the matter was not very much greater than that of the veterinary profession. Slight differences which existed in the veterinary profession also existed in the medical profession. As to the question about measures to be taken the members knew that in Germany as well as in this country there were advocates of mild measures and strong measures. He thought the time had come when associations such as the L.V.M.A. ought not to be satisfied with meetings and discussing various questions, but by collective investigation it would be possible to do very great things provided the work was very well divided. Those with a large practice could collect important statistics which it would be quite impossible for those with a small practice to collect.

Mr. FAULKNER said he had much pleasure in proposing that the best thanks of the association should be given to Dr. Delépine for his kindness in coming before them this evening, and he hoped there would be some practical outcome of the work that the essayist had taken upon himself to do.

Mr. WOLSTENHOLME seconded that proposition.

BERKELEY CASTLE AND ITS STOCK.

THE Smithfield Show, great and attractive as it was, had been pretty well exhausted in its interest for us after we had spent two days of close attention and hard work upon it. The great gathering at the sale of the Queen's fat stock at Windsor, where so many Scotsmen turned up, partly to see the

Royal farms, partly to see the sale, and partly in honour of the able and skilful Scotsman who has so long acted as the Queen's Commissioner, had claimed our attention on the Wednesday. Lord Winchilsea's projected demonstration on the Thursday of the progress he was making with his Tower of Babel, in the way of binding together by the bond of self-interest, three classes whose interests in many respects are diametrically opposed to each other, was not of sufficient interest to keep anyone for the space of another day in London—that great throbbing heart of the business life of the British Empire. Our work in the metropolis, therefore, was finished for the time being, and with a light heart we shook the mud of London off our feet, and set out for pleasant fields and pastures new. Our destination was Berkeley Castle, in Gloucestershire, our object in going there being, partly to inspect the herd in which the 4,500-guinea bull, Duke of Connaught, served for so many years, partly to examine into a report we had heard as to chronic abortion having been stamped out in that herd by a novel and very simple process, and, partly, also to enjoy a pleasant visit to Mr. Peter, who has for many a long year been land agent on that estate. From Paddington to Gloucester is a longish run; but the scenery is so varied and interesting, that no one who travels along that line for the first time will have any cause to complain of the tedium of the journey. For the first part of the journey we had as our travelling companion Mr. Leonard Pilkington, of Cavens, who was naturally very much elated over the success of his champion Galloway steer at Smithfield, which steer, by the way, was generally acknowledged to be the best representative of the breed ever exhibited at Smithfield. Besides owning a large stock of high-bred prize-winning Clydesdales, Ayrshires, and Galloways, Mr. Pilkington is going in strongly for the breeding of thoroughbreds, and his object in going to Reading that day was to inspect the progress made by his young thoroughbreds which are located in that quarter. As we journey on by Windsor and Reading, we can easily understand how it was that so much of that part of the country was for several days completely under water during the heavy flooding of last month, for a large part of the land on either side of the Thames lies very low and flat, and although the weather had been dry for at least a week, the river still reached perilously near the top of its banks. On arriving at the quaint and very attractive cathedral town of Gloucester, we change into a slow train, and a short run of some fifteen miles brings us to Berkeley Road, where Mr. Peter has a hearty welcome for us. As we drive along the road to Berkeley Castle, some three miles distant, we had ample opportunity of taking stock of Gloucestershire farming, and discussing with our host the distinctive features of Gloucestershire agriculture as compared with Scotch farming.

Gloucestershire Farming.

In the vicinity of Gloucester the farms are, for the most part, of moderate extent, from 150 to 250 acres being the average size, but a good many holdings are considerably smaller. The land is, comparatively speaking, all under grass, and some of the pasture lands are very rich and productive. A Scotsman, visiting that part for the first time, might be tempted to think it would be a capital stroke of policy to plough up some of these rich old pastures, and take a course of heavy crops off the land before laying it down to grass again. Such a course, however, would not be repeated by any one a second time, for, on account of the stiff, tenacious character of the land, the cost of cultivation would be far greater than the value of the crops at present prices. Besides, the laying down of land to permanent pasture is a very costly process in the south of England; and not only is the initial cost of working, manuring, and seeding the land very heavy, but many years of good management and liberal feeding through the consumption on it of cakes, are required before a good sole

of pasture is secured. The old adage that "to make a pasture would break a man, and to break a pasture would make a man," now holds good only as regards its first clause, for, although the making of a pasture in the south is still so costly that it would comparatively "break a man," yet, on account of the cost of cultivation and the low price of grain crops, the breaking of a pasture would now be an unprofitable speculation. In fact, however unwilling anyone may be to see the plough thrown aside and the number of farm labourers reduced, still the conclusion is inevitable that the old pasture lands in that quarter are much more valuable and much more profitable than arable land. As a matter of course, straw is very scarce in these parts, and the cows or other bovine stock kept in the house during winter are fed on meadow hay, with an allowance of cake or other concentrated feeding stuff. Dried brackens, sawdust, and peat moss are the substances chiefly used for litter. In Gloucestershire, as in so many other parts of England, the fields are very small, and are divided from each other by high thorn hedges. A Scotch farmer, visiting that county for the first time, might suppose it was a great waste of land to have so much of it taken up with hedges; but that is another mistake, for, on account of the shelter afforded by these high hedges, the grass grows pretty nearly all the year round in these small, well-sheltered fields, and the younger cattle can find a fair bite in them all through the winter. In the small part of tenacious clay, which is still under cultivation, the plough is drawn by three horses going tandem in the furrow, a system which necessitates the service of a driver as well as a ploughman. At the first blush, a Scotsman might think that a couple of good Clydesdales, worked abreast, would easily draw the plough, so that the services of the third horse and also of the driver might be thus dispensed with. But this would be another mistake, for the land down there is so stiff and sticky that two horses could never turn a furrow in it, and if three horses were worked abreast on it the land would be so completely turned into mortar that nothing would grow upon it for years to come. The system of ploughing with three horses going tandem in the furrow is, therefore, the only one adapted to that sort of land; and, as Mr. Peter said to us, the system followed by the best farmers in any district is almost invariably the system best adapted for that district. Mostly every farm has an orchard planted with apple trees, among which the cattle, sheep, or pigs are grazed, and the orchard is generally one of the most profitable departments of the farm, the making of cider being a very important industry in that quarter. Dairying is very largely carried on in Gloucestershire, part of the milk being sold sweet in the towns and villages, while a large part of it is manufactured into single Gloucester cheese, a few "Double Glo'sters" being also made. The extreme competition for farms, of which we have lately heard so much on this side of the Border, also prevails in Gloucestershire, and for every vacant farm there is always a plethora of competitors. Most of the farms are held on year to year leases, and the average range of rents is from £1 to £2 per acre.

Berkeley Castle and Home Farm.

Before we had finished discussing the differences between farming in Gloucestershire and Scottish agriculture we had arrived at Berkeley Castle. This grand old pile, so rich in historic associations, is of itself well worth going a long way to see. Here the visitor sees the bedroom and bed in which the hapless King Edward II. was sleeping when he was seized and done to death by the ruthless conspirators. The breach in the old keep wall caused by Oliver Cromwell when attacking the castle is also preserved, as far as possible, in the same state as it was when the great Protector left it. The home farm is only a short distance from the castle. The buildings on this farm are commodious enough, and large covered hay-sheds form an importan part of its equipment. A capitally equipped dairy also forms an important part of the steading. A large part of the milk handled in the dairy is ru

through an Alexander Separator, the butter being made up for use in the castle, while the separated milk is used for the feeding of pigs. During the summer months a part of the whole milk is used for the manufacture of Stilton cheese; and, as the Stiltons from Lord Fitzhardinge's dairy have a great reputation in the market, the demand for them is always greater than the supply. As good Stiltons readily command a price of 1s. per lb., the making of Stilton cheese is, of course, one of the most profitable uses to which the milk can be put. In addition to the home dairy, Lord Fitzhardinge has also erected a dairy factory mainly for the use of his tenants. This dairy factory, which is now in the hands of a limited liability company, has proved a great convenience to the tenantry, and pays its shareholders a good dividend; but curiously enough, none of the farmers whose milk is received at the factory seem to care for being shareholders in the company. A considerable part of the land on the home farm might be called haugh-land, as it lies very low and flat on either side of a deep stream which flows into the majestic Severn a few miles further west. As was the case in the neighbourhood of Windsor, this haugh-land formed what General Booth would call a "Submerged Tenth" in the time of the heavy floods a few weeks ago. Last year, however, when the South of England was at the very antipodes of the state of flooding recently experienced, Mr. Peter was able to turn this stream to very good account, for, in the time of the unparalleled drought which shrivelled up the crops in the southern counties, he converted the stream into a canal for irrigating the meadows on both sides, with the result that between the irrigation and the blazing sunshine he raised a magnificent crop of hay, while most of the other farmers in that quarter could have cut their hay with a lawn mower. Mr. Peter, by the way, is a Forfarshire man by birth, as he was born at Tillygloom, near Brechin, a farm which has been held by his family for generations, and is now held by his brother, Mr. Hendry Peter. In early life Mr. Peter was under his brother, Mr. John Peter, who was farm manager for Lord Southesk at Kinnaird Castle, and it was while he was acting in that capacity that the famous Erica, the foundress of the noted polled Angus family of that name, was dropped in the herd then under his brother's charge. For the last twenty-two years he has acted as commissioner for Lord Fitzhardinge, and the way in which he has discharged the duties of that office is a proof or his skill, tact, and good management.

Clydesdales and Highlanders.

The farm stock kept at Berkeley Castle is a varied one, consisting of a shorthorn herd, a Clydesdale stud, and a fold of Highland cattle. A herd of choicely-bred Berkshire pigs was also kept up till recently on the home farm, but, to the great regret of both Lord Fitzhardinge and Mr. Peter, the herd had to be slaughtered out on account of an outbreak of swine fever in the district. In the afternoon of the day on which we arrived there we had a good look through the Clydesdales. Mr. Peter is convinced that for ordinary farm work the Clydesdale is much more suitable than the heavier and slower-moving Shire, and as Lord Fitzhardinge shares the same belief, the Berkeley Castle stud horse is placed at the service of his Lordship's tenantry on very easy terms. The Berkeley Castle stud has for the last four years been headed by Prince of Berkeley, a massive, strong, well-built animal, bred by Sir Robert Loder, and got by Stonehenge out of Nancy of Whittlebury, whose granddam Nannie, was by the renowned Lockfergus Champion. Prince of Berkeley, now a six-year-old, is wearing well, and he has been breeding well, many of the young animals by him being of much promise. His young stock, however, are now coming to be so numerous, not only in the Berkeley Castle stud, but also on the estate, that another sire to take his place will have to be purchased before spring. Among the mares we noticed particularly the six-year-old Lilly of Berkeley, a stylish, big-sized bay mare, also bred by Sir Robert

Loder, and got by Stonehenge out of the Drumflower Farmer mare Lilly of Whittlebury, whose granddam was the Lochfergus champion mare Nannie. Lilly is the dam of a beautiful yearling filly—Lally—sired by Prince of Berkeley, and this filly is so promising that she will be brought out at next year's "Royal." Bell of Berkeley, a two-year-old, got by Prince of Berkeley out of the Lord Kelso mare Nell, is an animal of great substance and nice quality. In fact, the young animals in the stud are all of great substance, and this fact seems to give force to the contention of those who hold that the greater substance of the Shire is only an illustration of the law of environment, as the Shires are for the most part raised on stronger and heavier soil than the Clydesdales. The operation of this same law is also to be seen in the Highland herd at Berkeley Castle, for the Highlanders bred on the rich lands at Berkeley Castle lack much of the rugged grandeur which is characteristic of the Highlanders raised in the Highlands of Scotland. The Berkeley Castle Highland fold was mostly formed originally by purchases made from the Duke of Sutherland's herd at Shinness. Up till recently the bull which was at the head of the fold was Clebrig, the Shinness-bred bull which won the third prize at the "Royal" at Windsor, and most of the younger animals in the fold are got by him. Clebrig, however, has now gone to the block, and his place at the head of the fold has been taken by Athelstan, 977, a massive, straight-topped, level, brindled bull, bred by Lord Southesk, and got by Iain Challum, 667, out of Te Riabhach, 35, which won first prize at the "Highland" at Perth in 1887. He is, therefore, a very highly-bred bull, and individually he is well worthy of his place at the head of the Berkeley Castle fold.

The Plague of Abortion.

On the following day we had the pleasure of inspecting the Berkeley Castle shorthorn herd in the company of the noble owner and a party of his friends, including the Duke of Wellington, Lord Westmoreland, Lord Enniskillin, and Captain Thoronton. But, before making any remarks on the principal members of the herd, it is important to note some remarkable facts as to its past history. Twenty years ago the Berkeley Castle shorthorn herd was one of the leading shorthorn herds in England, and a large proportion of the most prominent prize-winners of the day were drawn from its ranks. As already noted, the famous bull Duke of Connaught was bought at the Dunmore Sale in 1874 for this herd at the record-breaking price of 4,500 gs. The purchase of this animal at this fabulous price proved to be one of the most profitable purchases ever made for any herd, as during the years he stood at the head of the Berkeley Castle herd he earned far more than his purchase price in service fees for cows sent from the best herds in England to be mated with him. He also begot in the Berkeley Castle herd a host of valuable animals, some of which were retained in the herd, while many others were sold at prices ranging from 100 to 1,000 gs. each. One of the young Dukes thus sold was Berkeley Duke of Oxford, which was sold to Mr. M'Culloch for exportation at the price of 700 gs. Another of the same family, namely, Berkeley Duke of Oxford 2nd, was bought for 1,000 gs. by Mr. Hume, of Barrelwell, Brechin, for Mr. Hill, of Minnesota. Mr. Angus, of Australia, also bought from Lord Fitzhardinge a dozen head of Duke of Connaught's descendants at prices ranging from 100 to 300 gs. each. But in the beginning of the "Eighties," this great herd which for the previous six years had been in the zenith of its fame, suddenly dropped almost completely out of sight. The Plague of Abortion had seized upon it with such virulence that scarcely a cow in the herd escaped, and many of the best cows had to be parted with on account of their repeated "slips." For ten years this state of matters continued; and, although the most eminent veterinary Professors in England were called in to advise on the subject, yet all the remedies that veterinary skill

could prescribe proved to be powerless to abate the plague. Even the Highland cattle on the place became affected with the plague, and it seemed as if the whole of the cattle stocks at Berkeley Castle would have to be cleared out by the way of stamping out the disease. At last, however, a method was suggested by which the plague was effectually stamped out. Mr. Andrew Montgomery, of Netherhall, had sold to Lord Fitzhardinge a lot of Clydesdale mares, and some time after he had gone to Berkeley Castle to see how the mares had suited. On learning how the Berkeley Castle herd was being decimated by the Plague of Abortion, Mr. Montgomery advised Mr. Peter to try a method which, to his certain knowledge, had been followed with unqualified success by Mr. A. B. Matthews, a well-known breeder in the New World. Arguing from the fact that carbolic acid acted effectively as a germicide when applied externally, Mr. Matthews determined to try whether it would not be equally effective as a germicide when applied internally. For that purpose he began to give his pregnant cows small doses of this substance, the doses being steadily increased until they reached half an ounce per day; and as soon as this treatment was adopted in his herd, the plague at once ceased. Mr. Peter decided to give this treatment a thorough trial, the carbolic acid being given to the cows in bran mashes; and in his case also, as soon as this treatment was adopted, the plague was stayed. The carbolic was given in small doses at first, and gradually the quantity was raised, till the dose reached the maximum of a half ounce per head, which was given every alternate day. Although the plague which had ravaged the herd for ten years ceased from the very day that this treatment was commenced, Mr. Peter still gives the pregnant cows a half-ounce dose of carbolic in a bran mash once a week as a preventive against the plague. When the Royal Society of England were recently conducting their inquiry into the subject of abortion in cows, Mr. Peter gave evidence before them as to his experience in dealing with the plague; and the veterinary experts on that Commission were so astounded at the very idea of giving a half-ounce dose of carbolic acid to a cow that they decided to take no notice in their report as to the remarkable evidence laid before them as to the use of this substance in stamping out the plague. It may, of course, be said that the plague may have been to die out of itself at the time this treatment was applied; but any one advancing such a contention must admit that it was certainly a most remarkable fact that, in the herds both of Mr. Matthews and Lord Fitzhardinge, the plague which had raged so virulently for years was stayed from the very day that this treatment was adopted.

The Berkeley Castle Shorthorns.

The herd at the present time is essentially of Bates blood on the female side, with Cruickshank blood on the side of the sires. A large proportion of the cows are direct descendants of Duke of Connaught; and the principal strains represented are the Waterloos, Winsome Countesses, Dowagers, and Blanche Roses. The Sittyton-bred bull Leonidas did splendid service in the herd, and was the sire of many rare good animals, including the yearling steer which won first prize at the recent Birmingham Show. The herd presently includes a grand lot of yearling heifers got by him, and these are all thick built, broad backed, richly fleshed animals of the best shorthorn type. The principal stock bull, Dolphin, now a two-year-old, was also got by Leonidas, his dam being Dowager 11th, a cow which is closely in-bred to Duke of Connaught. Dolphin is a massive, good, red bull, grandly fleshed along the back, strong in his quarters and thighs, and well ribbed up to the shoulder. Lord Fitzhardinge has also, within the last few weeks, purchased from Mr. Deane-Willis, of Bapton Manor, a rare good bull calf, got by Mountain Lord, 64,466, out of the Commodore cow Victoria 83rd, whose granddam was by the renowned Champion of England. This young bull—Mountain Victor by

name—is a straight topped, broad backed, and grandly ribbed animal ; and, as will be seen from his pedigree, he has in his veins some of the best and most coveted English and Sittyton blood. With such materials, and with the herd now happily cleared of the plague which ravaged it so long, there is good reason to believe that the Berkeley Castle herd will soon again take for itself among the shorthorn herds of England a place as prominent as that which it held when it was headed by the 4,500 guinea bull Duke of Connaught.

JOINT-DISEASE OF FOALS AND OTHER YOUNG ANIMALS.

In an article contributed to the *Journal of the Royal Agricultural Society of England*, by Professor John Penberthy, of the Royal Veterinary College, London, he first describes the different names by which the disease is known : "Joint Ill," "Navel Ill," "Foal Ill," "Scrofulous Joint Disease," "Specific Arthritis," "Rheumatic Arthritis and Pyæmia," and states that it is most commonly observed in foals, lambs and calves, and less frequently in young pigs and puppies. It occasionally occurs in isolated cases only, while at other times it affects a large number of young animals. It invariably appears soon after birth. It affects all breeds, pure and cross-bred, but is more frequently met with in the former. The cause of the disease has been attributed to in-and-in breeding ; scrofula or tuberculosis ; improper feeding or working of the mare during pregnancy, or the suckling period, cold, damp, and a variety of local unhealthy conditions. But the Professor states that it is beyond question that the disease is due to a germ which may enter the system of the young animal while in the womb, but most probably after birth. But whether contracted in the womb during the act of parturition or subsequent to birth there is ample reason for believing that the germ usually enters the young animal at the navel, and he explains the manner in which this may occur as follows :—"At birth the cord passing through the navel is made up, amongst other matters, of vessels which in the womb carry the nutritive blood from the mother to the fœtus, and the used-up impure blood from the fœtus to the mother. At birth this cord is severed, and the blood flow stopped by a clot which forms in the vessels. Soon after separation the end of the cord shrivels, and the aperture through which it passes heals up. The extremity of the cord in the navel dies and under favourable circumstances becomes absorbed. Conditions which favour the absorption of the dead part hasten the closing of the navel, so that, in the healthy new-born animal, there is a natural process to prevent the entrance of injurious matters through it. It is well known to physiologists and pathologists, that anything which retards the natural healing process favours the growth of microbes there, and affords a means for their entrance into the blood-vessels which distribute them through the system."

"It is important, therefore, in view of the evidence that the germ of this disease enters through this opening, to inquire into those circumstances which interfere with the natural disposition of the navel to heal. In all probability, anything which during pregnancy debilitates the system of the mother, may have this effect. Improper feeding, insufficiency of material essential to the nourishment of the fœtus, want of exercise, and especially anything which causes the birth of the young animal considerably before its time, must be regarded with suspicion."

Further, malignant parturient fever in ewes, and abortion in mares, should be looked upon with suspicion, as being related to the poison or germ which produces joint-ill, and the fact that the disease appears in a larger proportion of males than females, would indicate that the urine which is dribbled by the male, interferes with the healing of the navel. But all such matters, though important as predisposing causes, are not the originating cause of the disease,

that being due to a special microbe which usually settles at the navel before it is closed, and grows and multiplies in the clot in the broken end of the vessel. It is then carried away by the blood stream, and distributed to various parts of the system, amongst other places particularly selecting the joints. In the situation in which the microbe is arrested, it sets up inflammation, which results in the collection of quantities of matter of a peculiar character. In addition to this local effect, there is the production of a debilitating fever and other systemic effects.

The individuality of this microbe or its natural history, has not been worked out, but its effects have been carefully studied, and these make it clear from a practical point of view, that it is of the utmost importance to prevent the access of this germ into the navel vessels.

It is further evident that the affection is contagious, and may, therefore, be introduced into a herd or flock by an affected animal.

The symptoms are describes as follows :—"As implied by the majority of names given to the affection the more prominent symptoms are associated with the joints or the navel. Before swelling in these situations is appreciable it may however be noticed that a few days after birth the young animal has great difficulty in moving, is more or less lame, and manifests the indisposition to move by constantly lying down or standing in one position. Debility is evident, sucking is not carried out vigorously or continued, appetite is sometimes absent, and the little subject is tucked up, the coat becoming dry and harsh. There is often a slight discharge from the eyes and nostrils. The navel is generally swollen, open and discharging matter; and though sometimes it is healed on the outside, its neighbourhood is inflamed. In the course of a few days at some of the joints or other external parts there are noticed hot and painful swellings which assume a considerable size. Any joint may be affected, but it more frequently happens in the hock stifle, hip or knee. In lambs more rapidly than in calves or foals, it becomes evident that in these situations abscesses have formed which sometimes burst and discharge a peculiarly unhealthy looking material. The loss of flesh at this stage is very marked. From the commencement the breathing is hurried, and with the progress of the disease it becomes more and more disturbed, shorter, quicker, and sighing. This disturbance is often very marked and the subject is deemed to have taken a "chill." The pulse at first small and quick, becomes weaker and weaker, till it is scarcely perceptible. Occasionally in the early stages diarrhœa is a prominent feature ; this however may not make its appearance until the disease is advanced, but sooner or later is observed in most cases The temperature is raised, proving the febrile nature of the affection."

As a rule the symptoms are manifested from 7 to 20 days after birth, and the disease runs through its course in from 7 days to 3 weeks. Sometimes, however, the patient dies within 3 days of its being noticed to be ill. In such cases the symptoms are acute, and death may occur before abscess formation at the joints. The course may be prolonged, and some subjects "hang fire" for months, though this is the exception. There will naturally be variation of the symptoms, dependent to a great extent on the parts involved in the local changes set up by the germs after entering the body.

On *post-mortem* examination there is generally discovered evidence of the disease having resulted from affection of the navel. Though usually open, this may be found healed up on the outside. On the inside, the vessels frequently contain very dark blood, and unhealthy, sometimes putrid matter, and about the end of the cord abscesses may have formed. In calves and lambs most commonly through the veins, and in foals through the arteries, the germs having heen distributed to various parts of the body, and becoming arrested in some, set up inflammation, and formation of matter there. In all very young animals, the joints would appear particularly favourable to these

processes, and in animals dead of this affection are found in and about the joint sacs collections of matter, and evidence of destruction of essential parts of the joints, the lining membrane which secretes the "Joint oils," the cartilage covering the ends of the bone and the bone itself. Sometimes the quantity of matter is very great and bursting through the structures enclosing the joints finds its way into the sheaths of the tendons, &c. Any part of the body may give evidence of a similar process; the lungs, the chest cavity, the liver, kidneys, the glands, the cavity of the abdomen, and the brain are common seats of abscesses.

Curative measures are not very hopeful after the poison has entered the system. Attention should first be given to the navel from which all unhealthy matter should be removed and the part thoroughly cleaned and dressed with a disinfectant, and if any secondary swellings or abscesses occur in non-essential parts of the body, these should be opened and cleaned and disinfected in a similar manner. It is in preventive measures, however, that most success is likely to be attained, and these consist first in being careful not to introduce an affected animal into a flock or herd; and in the prompt isolation of and the thorough destruction or disinfection of all beddings, &c.

Further, all the young animals that may have been in contact with an affected one should have their navels cleaned out and dressed with a disinfectant solution.

The next consideration is cleanliness. All boxes into which mares are placed to foal and remain with their foals, should be thoroughly cleaned and disinfected previously. He further recommends where the disease has appeared that all foals or calves when born should have their cord and navels washed with a disinfecting solution, after which the cord should be tied with a string which has been steeped in the same solution so as to prevent the absorption of the infective germs. And those who attend to the affected cases should not be allowed to come near the healthy. This disease is most prevalent in this colony amongst our more valuable herds and flocks which are housed and kept more or less under artificial conditions, but it occasionally occurs amongst flocks of sheep and goats that graze on the veld, but lamb or kid for the most part in kraals; under such circumstances, as the Professor recommends, the affected lambs or kids with their mothers should at once be removed from the flock, and the remainder of the ewes placed in a new or clean kraal. Too little attention is given to preventive measures, in dealing with the several infectious diseases which affect our flocks and herds in this colony.

D. Hutcheon, *Colonial Veterinary Surgeon.*

MILK AS A FOOD UNSUITED FOR THE DIET OF ADULTS.

The popular idea that milk is one of the most wholesome and nutritious articles of food for use at all periods of life, is by many facts shown to be an error. Cows' milk is admirably adapted for digestion in the stomach of a calf. The bovine stomach is so constructed that it can deal with food in lumps or small masses, on account of the ruminating habits of the animal. It is doubtless for this reason that cows' milk is so constituted that, in the stomach, when brought in contact with the acids and curd-forming ferments of the gastric juice, it forms large, hard, tough curds. Woman's milk, on the other hand, forms small, soft curds. This is one of the chief reasons why cows' milk disagrees with infants, as it almost universally does, when given in an undiluted state. Ass's milk has been found to be much more wholesome for infants than cows' milk. It more closely resembles woman's milk than does the milk of the cow. The equine stomach is simple in structure, in this respect more closely resembling the human stomach than does the bovine.

The tendency of cows' milk to form in curds, is, however, a less serious objection to its use by infants than by adults, for the reason that the infant's stomach is scarcely more than a dilatation of the upper portion of the intestine, being much less pouched in form than in adults; consequently the contents of the stomach of the infant very readily and quickly pass out into the duodenum, where the perfect and complete digestion of milk normally takes place, the pancreatic juice being apparently the most active agent in the digestion of milk. With adults, however, the large curds formed in milk are retained for a much longer time, the digestion of milk in the stomach being imperfect, and microbes in abundance, fermentation of lactose and decomposition of casein take place, resulting in that very disagreeable and miserable condition commonly termed "biliousness," which means, not as is popularly supposed, a disturbance of the liver, but a rottenness in the stomach. The absorption of the resulting ptomaines and a general toxæmia, the germs which milk ordinarily contains in great abundance, encourage the fermentation and decay of the curds in the stomach; while, on the other hand, casein, being a readily decomposable substance, encourages the growth and development of the putrefactive and other organisms with which the fluids of the stomach always abound.

Rondot and Lepine have recently called attention to the fact that milk is not, in its constitution, well adapted to the sustenance of adults; at least, it is not a complete food. It contains too large a proportion of albuminoids in relation to the hydrocarbons. Great numbers of persons are the victims of migraine, bilious or sick headache, dulness of mind, depression of spirits, constipation, and a variety of allied and associated symptoms in consequence of the free use of milk. The common habit of drinking milk is particularly injurious, as a large quantity of milk entering the stomach suddenly and in an undiluted state favours the formation of very large and hard curds. Some years ago the writer encountered a case in which the patient nearly lost his life through this means. Being both hungry and thirsty, upon returning home late at night, he drank, within a few moments, two or three pints of milk. A few hours later he was awakened suddenly from sleep with a terrible distress at his stomach, and great nausea. After retching for some time, he felt a choking in his throat, and reaching down, seized the end of something which he pulled out, and, to his great astonishment, it proved to be, as he declared, "a rope of milk a yard long." Such a solid mass of milk would have undergone putrefaction, and doubtless would have set up grave, possibly fatal, inflammation, if it had not been removed in the manner above indicated.

Mr. Tait related to the writer, a number of years ago, an instance in which a boy, when recovering from typhoid fever, in the absence of his nurse obtained and drank three or four pints of milk. Two or three days later an obstruction of the bowels occurred and a lump was formed in the right iliac region. Mr. Tait was called, and upon opening the abdomen he found the obstruction to be at the iliac valve, and the small intestine was enormously distended. The mass was doughy in character. Mr. Tait undertook to reduce it by a gentle manipulation. By this means he was able to break the mass into fragments, and then he passed it along little by little into the cæcum, thus relieving the obstruction and saving the lad's life.

Sterilization of milk and the use of milk in connection with farinaceous substances, mitigate the evils referred to, to a large extent; still there are persons to whom milk is almost as injurious as are many poisons. Most primitive nations have discovered the unhealthfulness, for adults, of milk in its ordinary form, and have endeavoured to remedy the difficulty by subjecting it to fermentation, thereby converting the lactose into lactic acid, which is a valuable disinfectant and an aid to the digestive process. The natives of Central Africa invariably sour milk before using it by pouring it into a gourd

which is kept for the purpose. The Germans, Scandinavians, Italians, Russians, Hungarians, and Turks adopt analogous methods in the preparation of milk for food, rarely using milk in its raw state. At Carlsbad and almost all other German watering-places, sour milk and black bread constitute the dietetic regimen prescribed for the great majority of the patients. This simple diet is unquestionably one of the most important factors in the cure of many of the dyspeptics who frequent these places, accomplishing as much (perhaps more in some cases) as the celebrated waters which get most of the credit.

Kumyzoon is a scientific preparation of milk, in which the lactose is replaced by lactic acid. In the manufacture of kumyzoon the milk is sterilized, and the pure ferment is employed, so that the inconveniences attending the use of kumyss are avoided by its being made from sterilized milk, and by the addition of steaming. Ordinary kumyss contains multitudes of microbes of various sorts, each of which is developed in each particular acid, ptomaine, or toxine, thus giving to the product a great variety of flavours, and rendering it quite unreliable as regards its properties, either gustatory or dietetic.

Kumyzoon is manufactured by the Sanitarium Health Food Co., Battle Creek, Mich., and 28, College Place, Chicago, Ill. This company is manufacturing kumyzoon according to the formula furnished by the writer, and has it made under the writer's care at the Battle Creek Sanitarium. The manufacturers have now increased their facilities, so that they are sufficient to supply a large demand, and all orders will be promptly filled.

IMMUNITY.

BY J. G. SINCLAIR COGHILL, M.D., F.R.C.P., EDIN.

IMMUNITY, in its medical signification, is that condition of the organism which endows an individual with the power of resisting certain specific infections. The term is used more especially in relation to certain contagious or infectious diseases, such as the exanthemata, which run a more or less determinate course, and some of which are incapable of being reproduced in the individual, or at least in some of them only after the lapse of an indefinite time. The study of immunity is interesting and important in its relations generally to prophylaxis, or the prevention of disease, and specially in connection with the more recent problems of serotherapy.

Immunity may be classed first as natural, and second, acquired. Natural immunity may be (*a*) general, (*b*) limited or relative. We see persons who are continually exposed with impunity to all the various forms of infection. These we would define as enjoying general immunity, while those with limited immunity succumb only to particular contagions.

Acquired immunity again might be classed as (*a*) natural or (*b*) artificial. The former the result in the ordinary way of an accidental infection *per vias naturales*, such as we see after attacks of small-pox, scarlatina, measles, whooping-cough, etc. The latter from an intentional protective inoculation of the materies morbi or contagious element, such as inoculation or vaccination to procure immunity from small-pox.

Many theories had been advanced to explain the several conditions of immunity. Natural immunity has been supposed to result from greater vigour and vitality of constitution, but this can only be partially so, as one sees the most robust succumb to infection which much less vigorous individuals have successfully resisted. The immunity of these latter must be derived from some specific element or condition in their organism, similar to that which remains after an infectious disease has run its course. This natural immunity, which apparently increases with the age of the individual, has been sought to

be explained by the theory of a slowly continuous minute infection from infancy, too feeble to develop the objective phenomena of the disease, but yet sufficient to produce in aggregate the protective influence of a full attack. The bacillus of diphtheria, the comma bacillus of cholera, the tubercle bacillus, and the pneumoccus have all been found on the mucous membrane of the mouth, fauces and nostrils of individuals who had not developed in the slightest degree the specific morbid processes associated with these organisms. In connection with this question of immunity, both natural and acquired, it may be asked, What part do the phagocytes play in the protective process? Do they attack the enemies at the gates, as well as hold the citadel against them?

In acquired immunisation it has been suggested that in every individual there is a certain limited amount of material, the appropriate pabulum of the infecting microbes, which, when used up, their death and the resolution of the related morbid process ensue; but this certainly does not satisfactorily explain the condition attained. The morbid action or disease is due to the toxic secretion or toxin of the microbes; although some authorities, among others Roux, of Paris, seem inclined to attribute it rather to the toxic potency of the dead microbes themselves. It seems probable rather that acquired immunity results from the decomposition or transformation of the toxin into a corresponding antitoxin, which remains and protects. These antitoxins must be of a chemical nature, of some what stable composition, capable also of maintaining a permanent character. They must have their principal seat in the blood dissolved in the serum. That the antitoxins are not only protective but also curative of their corresponding toxins is probably one of the most valuable discoveries in pathology and therapeutics of recent times, and it is impossible to say to what extent its application may extend. In tetanus, and more especially in diphtheria, the curative efficacy of the antitoxins has been established apparently beyond doubt, and although in the latter case Virchow at first opposed its recognition on *a priori* grounds, he had subsequently to admit, as he well put it, "the brutal logic of fact."

Reviewing the history of the subject, it is strange to note the long intervals between the dawn of the idea and its several developments. The starting point was inoculation for small-pox, next Jenner's discovery of vaccination, then the long pause until 1857, when Professors Faye, and Boeck of Christiania carried out their disastrous experiments, which they termed syphilisation, next Pasteur's rabies antitoxin, followed by Koch's tuberculin, which is certainly of the nature of an antitoxin, and of the therapeutic efficacy of which, when judiciously employed, I am still convinced, and then more recently the antitoxins of tetanus and diphtheria. Brief reference may here be made to the alleged antitoxin properties of Dr. Viquerat of Geneva's serum of the ass or mule immunised by repeated inoculations of tubercle. A carefully observed series of trials of this material failed to show that it had any specific effect on the pulmonary lesion. In nearly all the cases, however, there was experienced a feeling of exhilaration or *bien-aise* after the inoculation, and there was also a marked gain in weight recorded. It thus seemed to act mainly as a stimulant to nutrition. A series of corresponding observations with the simple unmodified serum of the ass, kindly prepared for me by Dr. Armand Ruffer, gave precisely similar results—indeed, in both sets of cases the effects seemed identical with what would be expected from the transfusion of a similar amount of blood.

ABDOMINAL SURGERY.

BY PROFESSOR J. MACQUEEN, F.R.C.V.S.

The numbers refer to a list of references given at the end of the paper.

(*Continued from page* 140.)

DURING the next four days he drank from 12 to 18 pints of water every 24 hours, but he refused to eat either hay or grass. He groaned when moved, was dull and very stiff. Two days later his appetite returned, and by the ninth day he fed well, looked bright, and moved freely. The wound healed rapidly. In about a fortnight he was put to work on the land, and in September of the same year he was bought for 1,100 francs by a Paris merchant, who was very much pleased with his purchase.

It is to be regretted that the report does not contain particulars of the length of the incision, and of the material used in stitching the bowel. A furrier's suture implies the passage of the silk or other thread through the whole thickness of the gut, and, as a consequence, considerable risk of leakage.

To relieve obstructed bowel in the horse, laparo-enterotomy was performed by Veterinary-Captain SMITH (No. 34) in 1887, by Messrs. DOLLAR, RICKARDS, and ROGERS (No. 35), and by Mr. GARRY (No. 36) in 1894. These cases did not recover, but the reports show that death was mainly attributable to the operation having been too long delayed.

Before CHARLIER (1850) made known his method of spaying *per vaginam*, mares were always castrated through the flank, and occasionally even now, as a successful case recently recorded by MARTIN (No. 37) goes to prove, the older operation is preferred.

Cryptorchid horses have been castrated through a wound in the flank by Serres, Barfœd, Hoyer, and Cadiot; and I may add that the castration of abdominal cryptorchids is usually effected by laparotomy only slightly modified.

Laparotomy has been performed oftener on cattle than on horses. Few fatalities have been recorded. In oxen invaginations have been reduced, herniæ liberated, and the bowel has been resected. Probably the earliest operation is a laparo-enterectomy or resection performed by Thomas Brayn, a cattle-doctor, of Yeaton, Salop, and quoted by CHESELDEN (No. 38) in 1730. Brayn was called to an ox suffering with obstinate constipation. He opened the flank, searched for the obstruction, and found "the gut was about the stoppage putrefied for about three-quarters of a yard." This part he excised, then drew and stitched the ends of the sound gut together upon "a hollow keck" three or four inches long, and closed the hole in the flank. The ox passed the keck, recovered, and served its owner usefully for several years.

Intussusception was successfully reduced in 1839 by ANKER, of Berne (No. 39), who had operated frequently in cases of pelvic hernia.

MEYER (No. 40) opened the right flank of a cow, brought the invaginated bowel outside, and failing to effect reduction, excised about six feet of gut which was becoming gangrenous. To facilitate anastomosis, Meyer inserted into the bowel a piece of paper rolled up and greased. The edge of the posterior gut was inverted, and the interior end passed into it for about an inch and a-half. The serous surfaces were united by a continuous suture of well-waxed thread passed through the serous and muscular coats.

TACCOEN (No. 41) operated on two cows. From one he removed ten inches of gut. The external wound healed in thirty-five days. In the other cow an artificial anus formed, but this did not impair her health.

RIEDINGER (No. 42) treated ten cases of invagination in oxen. Seven had to be slaughtered; and in three the invagination was reduced, but only two recovered completely.

DEGIVE (No. 43) diagnosed invagination in a cow. He incised the flank,

brought the intestine outside. and, after considerable difficulty, effected reduction. The cow recovered in three weeks. Riis (No. 44) reports a similar case. He found the volvulus with ease and drew it to the opening in the flank. The gut was swollen and congested. It was bathed with weak sublimate solution, gently pressed for fifteen minutes, and reduced. The cutaneous wound was closed with fifteen button stitches. The animal fed in the evening and completely recovered.

Simpson (No. 45) attended a cow that was vomiting. He diagnosed intussusception and proposed laparotomy. He operated on the cow standing, but failed to find the affected gut. The cow died next day. Examination discovered invagination of the ileum.

Since 1864 laparotomy has been resorted to in six cases of uterine torsion in cows. Reduction was accomplished, and all recovered.

Of laparotomy in dogs little need be said. Always a favourite of the physiologist, for many years the dog has been almost indispensable to the surgeon. The various abdominal operations—'ostomies, 'otomies, and 'ectomies—now practised with commendable results on man, were first tested on the dog; and when it is remembered that nearly every organ inside man's abdomen has been advantageously wounded by the surgeon's knife, some estimate may be formed of the value of the dog in experimental surgery. Nearly a century ago Travers, Astley Cooper, and Thomson—to mention only surgeons of this country—demonstrated the feasibility of laparo-enterotomy on dogs. But it does not appear that the publication by Travers, in 1812, of "An Inquiry into the Process of Nature in Repairing Injuries of the Intestines," induced many veterinary surgeons to try the operation. This indifference to operative surgery in veterinary practice is unaccountable. Perhaps it is only "another of those innumerable instances in which veterinarians have searched not and remained uninformed."

Steel (No. 46) refers to laparotomy and enterectomy in the treatment of obstruction and invagination, and within recent years a few attempts have been made in this country, but I have not been able to find the record of a single successful case in English veterinary works.

Felizet (No. 47) reports four cases of obstruction by corks. Two of the dogs, left to nature, died; the others, treated by laparo-enterotomy, made an excellent recovery.

Degive (No. 48), operated on a dog in which obstruction had been diagnosed by abdominal taxis. He opened the abdomen about an inch to the left of the linea alba by an incision three inches long. Having found the obstruction, he incised the bowel at its convex curvature and extracted a pebble. The wound in the gut was closed by a continuous Lembert's suture, and the abdominal wound was sutured in two layers. For the twelve hours immediately following operation the patient was offered only a little plain water, and during the next eight days milk diluted with water was given five or six times a day. The dog was discharged on the ninth day, and the external wound under simple antiseptic dressings soon healed.

Parkes (No. 49) experimented by shooting dogs in the abdomen. Of twenty-one treated by laparotomy after shooting, ten died in from three days to three weeks, and nine recovered.

Diagnosis.—Abdominal diseases amenable to surgical treatment, with few exceptions, may be diagnosed in dogs by manipulation, in cattle by rectal exploration or by rumenotomy, but in horses diagnosis is extremely difficult. The size, disposition, and relations of the viscera, and the common symptoms they provoke when diseased, give little hope of greater accuracy in diagnosis so long as only current methods are pursued. In the future, exploratory incision may be reasonably expected to give some assistance. When it has been shown that the peritoneum can be opened without risk to the patient, or

without adding to the gravity of the disease that may call for relief, present difficulties will diminish and in time perhaps disappear. This view, in face of past and present practice, may be too sanguine; but with anæsthetics to suspend movement, and antiseptics to prevent contamination of surgical wounds, expectant treatment and dangerous delay may yet give place to more active measures.

Assuming that cases of volvulus, invagination, internal herniæ, and obstruction by bands, pedunculated tumours, or by concretions, can be treated by surgical interference, the question arises: How may these conditions be distinguished from other abdominal affections? At once I confess my inability to give a satisfactory answer. The history of the patient; the character of the pain, whether intense and continuous, or subacute and intermittent; distension, local or general; constipation, persistent or interrupted; the action of eserine; the posture of the patient; backing; straining; the quantity of urine passed; the rejection of clysters; expulsion of flatus; and the symptoms sometimes afforded by palpation, percussion, and auscultation, merely suggest a possible cause—all are fallacious and unreliable in the diagnosis of the diseases just mentioned. If examination *per rectum* gives more assistance, it does not always yield satisfaction. The height of the operator and the length of his arm should be considered as well as the state of the horse's bowels. In a healthy horse, fifteen hands high and of medium coupling, the hand may reach the cœliac axis and the last rib. In a long-loined sixteen-hands carriage horse, lying on his right side, I have felt without difficulty the border of the splsen, the last rib, and the left kidney, but in the standing horse I have never reached the spleen. Experiment warrants the assertion that an imaginary vertical plane falling from the first lumbar vertebra to midway between the xiphoid and umbilicus represents the forward limit of rectal exploration. Employing the left hand for the right half, and the right for the left half of the abdomen, all the viscera behind this boundary may be examined more or less satisfactorily—in the healthy horse. In abdominal disease, especially in obstruction, the intestines are often crowded towards the pelvis, and frequently the hand cannot pass onwards in consequence of straining and pressure from distended bowels. But when the hand has reached the flank it may, and sometimes does, discover displacements, volvulus, or invagination; recognise and remove concretions; ascertain the condition of the contents of the colon, cæcum, floating colon, and small intestine; and in herniæ distinguish and liberate omentum and bowel. Cases that give no sign to exploration are uncommon, and without this precious aid diagnosis, whether positive or negative, is doubtful. In this, as in other diagnostic efforts, the spirit of the practitioner dominates procedure. With faith in possibilities, rectal exploration may be tried again and again, and information may be gained at every investigation.

LAPARO-ENTEROTOMY.—Practical acquaintance with surgical wounds of the horse's flank had convinced me that the bowel could be withdrawn from the abdomen, exposed for some time, manipulated and replaced, without danger to life, in spite of almost total neglect of antiseptic precautions. But I was not sure if the horse would tolerate incision and suture of the gut. To determine this point, and to ascertain the best way to operate for the relief of intestinal obstruction, I commenced, in February last, a series of experiments on horses. I will give particulars of the materials and instruments employed, and a short description of the procedure, with the clinical reports of two or three cases.

Materials, instruments, &c., required.—Four large and twelve small Turkey sponges, for use inside the abdomen and about the bowel. Twelve yards of tarlatan cut into two-yard lengths, for packing round the bowel brought outside the wound. Four sponge cloths for laying on abdomen and thighs to catch dust during operation, to wipe the skin, and for rougher work *outside* the wound

Three enamelled iron trays to hold instruments, ligatures, and needles. Four zinc pails to hold hot water, sponges, lotions, &c. One small bucket marked in pints to measure hot water for making solutions, &c. Some 20 per cent. carbolic soap for washing hands and flank, and for shaving. One aseptic scalpel and a razor. Two elbowed scissors, sharp and blunt pointed, to divide muscles, open peritoneum and bowel. Two sponge-holding forceps. Two Thornton's T-shaped forceps to stop bleeding from skin or muscle. Two Wells's catch forceps, and one or two spring and dressing forceps. A few straight and curved suture needles. Twenty milliners' needles, straws No. 5, for stitching the gut. Chinese twist for all sutures—No. 1 for the gut, No. 3 for muscles, and No. 6 for the skin. A fine trocar and cannula, to puncture, if necessary, distended bowel. A convenient supply of hot water, and a piece of fine muslin several layers thick for use as a sieve for water to be used for lotions or for irrigation. Chloroform and an inhaler with sponge; and some pure carbolic acid in a graduated bottle. For dressing the wound the following should be ready:—Iodoform and tannin, 1 to 3; antiseptic cotton-wool and tow; carbolised gauze; a piece of calico, six yards by nine inches; roller bandages; and a few safety-pins.

Preparation.—The small sponges may be obtained ready for use from any wholesale druggist. They are known as Milne's aseptic sponges. Probably the large sponges can be purchased in the same condition. I prepared my sponges in this way:—After beating out the sand the sponges were placed for four or five days in cold water, which was changed daily, then transferred to a solution of hydrochloric acid, an ounce to the gallon, where they remained for twelve hours; from this they were placed under the cold water tap and turned about under a constant stream for an hour or two; then each was thoroughly washed in plenty of hot water, squeezed as dry as possible, and finally placed in 5 per cent. carbolic solution.

The tarlatan, cut into two-yard lengths, was washed in hot water containing Hudson's powder, then thoroughly rinsed, and placed beside the sponges in carbolic. The sponge cloths were boiled, rinsed in cold water, soaked in 5 per cent. solution of carbolic, and then dried.

The Chinese twist was stretched by winding each skein on a bit of wood (3 inches by $1\frac{1}{2}$ inch), plunged in hot water, and boiled for ten minutes; then stretched again by winding on another bit of wood, and finally placed in a wide-mouthed bottle containing 5 per cent. solution of carbolic acid.

The scissors, forceps, needles, scalpel, &c., should be kept together in a sheet-iron case, which may be placed on a stove or near a fire.

After operation, the sponges, instruments, &c., must be cleansed. The sponges and tarlatan are placed together in cold water, which is frequently changed; then the sponges are transferred to hot water containing washing soda—4 oz. to the gallon—and left there for a day. From this they are placed under the cold water tap, then washed separately in hot water, dried in the sun, divested of hairs, and again placed in 5 per cent. carbolic. The tarlatan is washed as before with Hudson's powder, dried, and placed beside the sponges. For keeping sponges and muslin a two-gallon pail, with hinged lid, will be found very convenient. The sponge cloths, after soaking in water, are boiled with soda, rinsed, and dried. The instruments are scrubbed and washed in hot water containing Hudson's powder, dried, and enclosed in the iron case, which is then placed near a fire.

Preparation for Operation.—Before casting the horse, the flank from spine to groin and from haunch to sixteenth rib is clipped and washed. When the horse is under chloroform, the flank, within two or three inches of the boundary marked by clipping, is shaved and disinfected. While these preliminaries are proceeding, the pails and trays are arranged and filled. All the solutions must be warm, and the water used in their preparation passed through muslin.

Pail No. 1 is filled with 5 per cent., and pail No. 2 with 2½ per cent. solution of carbolic acid. The trays are filled with hot solution of the same strength as pail No. 2. The sponge cloths are placed in No. 1, and kept there until required. The sponges and tarlatan, after having been squeezed as dry as possible, are placed in No. 2. In one tray are placed the milliners' needles, twelve of which are threaded with twist No. 1; another tray contains scissors, forceps, and scalpel; and the third contains reserve instruments, suture needles, and twist Nos. 3 and 6. Pail No. 3 is filled with hot water for rinsing hands and instruments; and pail No. 4 is filled with boiling water, which is protected from dust and allowed to cool. This water will be required to wash the bowel after suture.

Abdominal Incision.—The linea alba offers the least vascular and shortest route to the interior of the abdomen. Through an incision of the white line any organ within the cavity can be felt, the small and large intestines in part can be seen, and to some extent portions of these viscera can be withdrawn; but the colic mesentery is too short to permit the first part of the floating colon to pass through the wound. Besides, if the incision is made at this point the wound does not heal rapidly, and adhesion between its peritoneal surface and omentum or bowel is a probable complication. In the horse, incision of the abdomen an inch or two to the right or left of the linea alba is equally objectionable. When the floating colon has to be opened, I prefer to reach the bowel through the flank. In opening the flank I make three wounds before touching the peritoneum. The first divides the skin, fascia, and *external oblique muscle;* the second the *internal oblique;* and the third the *transversalis.* The first starts at a point four inches below the lumbar transverse processes, midway between the angle of the haunch and the last rib, and passes downwards and forwards for seven or eight inches.

(*To be continued.*)

THE SIMLA HORSE CASE.

On the 18th July, Captain Beadon, District Judge, gave judgment in what is known as the horse case. It was a suit brought by Lieutenant-Colonel Disney Roebuck against Mr. E. P. Henderson, C. S., for the price on a horse, Rs. 800. The horse was at Chakrata at the time of sale, the purchaser being at Simla, and the animal was bought solely for the use of a lady on the strength of a description in an advertisement in the *Pioneer*, and of certain further statements by the seller in the course of correspondence between the parties. The horse was described *inter alia* as perfectly sound, 14-1¾ high, and perfectly well mannered. When he arrived at the buyer's residence the buyer had him professionally examined, after giving him 22 hours' rest. Veterinary-Captain Rutherford certified the horse to be unsound, owing to very recent and old brushing marks on both fetlocks and coronets, such a habit of brushing endangering the rider's safety; 14-0½ to 14-1 in height; and on the facts, as stated to him, not well mannered for the purpose for which he was bought. Mr. Henderson thereupon declined to accept the horse, but the seller insisted on the payment of the price agreed on, and eventually filed a suit to enforce payment.

The court, in dismissing the suit, finds that the horse was unsound before he was advertised, also before he was despatched from Chakrata, and also when he arrived in Simla, the unsoundness consisting of brushing, due to defective formation, and rendering the horse dangerous to his rider, and especially to a lady. Also that the horse is only 14·1 in height, each of these facts constituting a breach of warranty; and that Mr. Henderson did not accept the horse by agreeing to a proposal of the seller's that the latter should

forward the animal to Simla in charge of his own syce, defendant therefore not being precluded by the forms of section 117 of the Contract Act from rescinding the contract. The court further finds that the horse was correctly described as perfectly well mannered, the defences on this head and on two pleas of law as to the agreement being void for want of consent, and owing to a proved joint mistake of fact as to height, therefore failing. The court rejects the contentions of the plaintiff's counsel that Mr. Henderson's conduct in the case shows him to be a person unworthy of belief, and that he was guilty of negligence in the transaction. The court records that Mr. Henderson admitted the good faith of Colonel Disney Roebuck from the first, and otherwise acted during the trial in a manner considerate to the plaintiff.

The case has excited much interest. There was a conflict of the evidence given by veterinary experts, who held opposite views as to brushing constituting unsoundness. Colonel Roebuck relied on the certificate of soundness given by Veterinary-Colonel John Anderson, in Bombay, on November 2nd, 1894.—*Sent by R. Rutherford, F.R.C.V.S., Edinburgh.*

CONTAGIOUS DISEASES ANIMALS ACT, 1894.

COMBINED SUMMARY OF RETURNS for the three weeks ending July 27th, August 3rd, and August 10th, 1895.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Anthrax.	Glanders (including Farcy).	Rabies.	Foot-and-Mouth Disease.
None.	*Slaughtered* Diseased, etc. ...3544 Died ... 411 Suspected 150 4105	Fresh Outbreaks 10 Animals Attacked 14	Fresh Outbreaks 51 Animals Attacked 83	Dogs Killed 20 Sheep ,, 5 Sheep Died 3 28	None.

SCOTLAND.

None	*Slaughtered* Diseased, etc. 295 Died ... 123 418	Fresh Outbreaks 4 Animals Attacked 6	Fresh Outbreaks 2 Animals Attacked 6	None.	None

IRELAND.

None.	*Slaughtered* Diseased, etc. ... 296 Died ... 152 Suspected 170 618	None	None	Dogs Killed 21 Cattle ,, 5 Goats ,, 2 Sow ,, 1 29	None

Legal News.

TRADING AS A VETERINARY SURGEON.—At the North Riding Police Court, at the Town Hall, Scarborough, on the 8th August, before Mr. Charles Woodall

(in the chair), Sir Frank Lockwood, Q.C., M.P., Mr. J. E. Ellis, M.P., Captain the Hon. F. Johnstone, Colonel Kendall, Mr. John Dale, and Mr. Leasowe Walker, Thomas Danby Belt, farrier, of Hunmanby, was charged with having illegally practised as a veterinary surgeon without having a certificate at Gristhorpe on the 9th of May. Mr. G. E. Royle, instructed by the Royal College of Veterinary Surgeons, appeared for the prosecution. The defendant having pleaded guilty, Mr. Royle, addressing the magistrates, said: It seemed that on the 9th of May, Mr. Belt, through the agency of his son, who lived with him, sold a bottle of horse medicine to Mr. Sawdon, of Scarborough, which bore the label "Belt's antispasmodic gapes medicine for horses. Prepared by T. D. Belt, veterinary-surgeon, Hunmanby." Mr. Royle, having pointed out that the maximum penalty was £20, said the College were going to put in operation energetic measures for the suppression of the improper use of the title by farriers and cow doctors. It was clearly in the minds of the Legislature when they passed that Act not only to protect the Royal College, but also to act in the interests of the public at large. A fine of £1, including costs was imposed.

A Veterinary Surgeon on his Rights.—At Manchester City Coroner's Court recently, when the jury were about to be sworn, a gentleman in the jury box asked the Acting Deputy Coroner, Mr. L. J. Aitken, whether he was not entitled to be excused from serving, seeing that he was a professional man. Mr. Aitken—What are you? Applicant—A veterinary surgeon, and I have a number of cases awaiting my attention at home. I, as a professional man, question the right of the police in summoning me to act as a juryman here. According to Act of Parliament I ought not to serve. Mr. Aitken—If you call my attention to any Act of Parliament which says so, I will excuse you. Have you got it here? Applicant—I have not got it with me, but I am a professional man. Mr. Aitken—I do not dispute that fact, but I should like to see the Act of Parliament to which you refer, and which you say exempts you from serving. I will give you time to fetch it. Applicant (raising his voice)—It will be in your Act. I may not be able to find mine to-day. I am only asking for my rights. I am a professional man. (Laughter.) Mr. Aitken—Listen to me; I don't want to be lectured by you, if you are a professional man. I will allow you to go home for the Act of Parliament which absolves you from serving, and also for your diploma. (To the officer of the Court)—Has this point ever been raised before? The officer—No, sir. The gentleman is not summoned here on his qualification as a veterinary surgeon. In the lists he is described as a shoeing smith. (Laughter.) Applicant—I may not be able to find the Act to-day, but I'm a professional man. (Laughter.) Mr. Aitken—Well, I'll let you go now, but I will have you summoned for Wednesday, when you must bring the Act of Parliament with you. If you don't find it by Wednesday, I will see that you are summoned on Friday, and on each succeeding day until you do find it. Applicant—Very well; that's reasonable; but I only want my rights. I'm a professional man. The applicant then retired.

Veterinary Prosecution at Rye.—Recently, at Rye County Bench, before Major Stileman and other justices, H. Leden, of Bread Oak, Brede, was summoned by Mr. J. C. Buckwell, at the instances of the Royal College of Veterinary Surgeons, for unlawfully acting as a veterinary surgeon without being qnalified so to act, on July 1st. Mr. C. Hayles appeared for defendant, who pleaded guilty. Mr. Buckwell produced the authority from the Royal College of Veterinary Surgeons to institute the proceedings under the Veterinary Surgeons Act, 1881, which provided that if after 31st December, 1883, any person, other than a member of the Royal College of Surgeons, acts or says he acts as a veterinary surgeon, he shall be liable to a penalty of £20. The facts of the case were that Mr. Leden lived at Broad

Oak, Brede, and there exhibited a plate stating that he was a "horse breaker and surgeon for horses and cattle." It was to the latter portion of this that the action applied, and the Royal College of Veterinary Surgeons were bound to protect themselves against misrepresentations of the kind. Gentlemen passing through the College had to undergo a very long training, and it was very necessary that they should be protected in their profession. The prosecution did not suggest that Mr. Leden acted wilfully, for he (Mr. Buckwell) believed he was a foreigner, and he would ask, therefore, that a nominal fine only be inflicted. He had only been at Broad Oak about four months, but he had exhibited the plate referred to at Silverhill, where he previously resided.—Mr. C. Hayles, on behalf of the defendant, admitted that Mr. Buckwell had stated the case very fairly, but he had forgotten to state that a man might act as a veterinary surgeon, but must not state that he did so. Such a person also could not recover any fees. No objection having been made to defendant exhibiting his plate at Silverhill, he had no idea, being a foreigner, that he was breaking the law. He had studied and practised veterinary surgery abroad, and there was no doubt that he was fully qualified to take care of animals, but of course English veterinaries wished to be protected, as well as English solicitors (laughter). The error was a matter of ignorance, and as it was the first in the district that had been taken under the Act, he hoped a nominal fine would be imposed as a warning against others in the locality to keep within the necessary bounds.—A fine of £1 and £1 1s. costs was imposed, a fortnight being allowed in which to pay the money.

Army Veterinary Department.

Vety.-Lieut. W. E. Russell will assume veterinary charge of the horses of the 1st Division Field Artillery in the Grand Depôt Barracks, Woolwich, vice Vety.-Captain T. A. Killick; also of the 2nd Division Field Artillery, West Rear Range, vice Vety.-Major B. L. Glover.—*Broad Arrow.*

Vety.-Lieut. Col. C. Clayton will vacate the appointment of Inspecting Veterinary Officer, Bombay Command, on Oct. 11th.—*Army and Navy Gazette.*

London Gazette 6th August, 1895.

Vety.-Lt.-Colonel F. Duck, Principal Veterinary Officer in India, is granted the temporary rank of Vet.-Colonel whilst so employed.—Dated 1st April, 1895.

Vety.-Major W. S. Adams to be Vety.-Lt. Colonel, vice C. Phillips, F.R.C.V.S., deceased.—Dated 15th June, 1895.

London Gazette, August 16th.

The Queen has approved of the retirement from the service of the undermentioned officer:—Bengal Veterinary establishment—Veterinary-Lieutenant-Colonel G. Kettlewell, dated 19th February, 1895.

Retired List.—Staff-Veterinary-Surgeon R. J. G. Hurford, R.L., has been granted a good service pension of £50 per annum, vacated by late Principal Veterinary-Surgeon J. Collins, R.L., deceased.

Movements.—Veterinary-Captain T. A. Killick returned to Woolwich on the 10th inst., and Veterinary-Lieutenant F. M. Carr to Aldershot on the 16th inst., on completion of duty with mobilized Reserve Force.

Veterinary-Captain A. J. Haslam returned to Dublin on termination of the manœuvres, Eastern Force, Ireland, on the 17th instant.

Veterinary-Captain R. W. Raymond accompanied the 8th Hussars from Hounslow on the 14th inst., and Veterinary-Captain T. Marriott with 7th

Dragoon Guards from Shorncliffe on the 3rd instant, for duty with the Aldershot Cavalry manœuvres.

The death of Principal Veterinary-Surgeon James Collins leaves vacant a distinguished service reward, one of two granted to the department. Mr. Collins was in veterinary charge of the Inniskillin Dragoons throughout the Crimean War, having succeeded to the appointment at the death of Mr. Kelly, who was drowned when the transport *Eupatoria* was burnt *en route* to the Crimea. There now only remain three veterinary officers who were at the Alma and Balaclava, in addition to the siege of Sebastopol, viz., Veterinary-Surgeon Stephen Price Constant, who was with the 17th Lancers and 5th Dragoon Guards; Veterinary-Surgeon Felix Delany, on the general staff throughout the campaign; and Veterinary-Surgeon T. P. Gudgin, who was with the Scots Greys and 5th Dragoon Guards. Staff Veterinary-Surgeons A. J. Owles, John Barker, R. W. Murray and Herbert Sewell were present at the siege of Sebastopol.—*Broad Arrow.*

Extracts from Foreign Journals.

ON THE THERAPEUTIC VALUE OF CHLORIDE OF BARIUM.

Dr. W. Dieckerhoff, of Berlin, in a second article contributed to the *Berliner Thieräztliche Wochenschrift*, proclaims the virtues of this drug and gives the dose to be administered as follows: When the heart-beat is moderately frequent and the maxillary pulse is full and soft, the dose to be injected into the jugular vein varies from 1·25 grammes downwards to one gramme, ·75 gr. and ·50 for horses according to size, weight, and condition; for ponies it may go down to ·30 gr. (1 gramme = 15·43 grains). But if there is found on examination of the sick animal any considerable heart-weakness with a quickened pulse and lowering of strength, then for intravenous injection smaller doses must be given, according to the size of the horse, from ·75 to ·30 gr.

"The advantages which chloride of barium possesses over all other drugs, whose object is to cause peristalsis of the bowels, is that, when applied intravenously, it produces immediately contractions of the whole bowel and that these contractions persist longer. Judging by what I have seen in the successful treatment of many cases of colic, I am distinctly of opinion that chloride of barium in suitable doses is the most effectual carminative in cases of flatulent colic in the horse. Excluding colics which are caused by incurable stoppage of the bowels, we may say that the production of gas through abnormal fermentation of the contents of stomach and intestines is the most dangerous factor in the rise and progress of colic disorder. As horses are unable by eructation to get quit of this accumulated volume of gas, and as there is no chemical means for combining these gases, there remains only the chance of expelling them through the bowels. It is quite obvious that any means of expelling these gases quickly and effectually must be of great value in the treatment of colic. Even the administration of small doses of chloride of barium may in the gravest cases bring about extremely favourable therapeutic results. That the drug in all cases of incurable stoppage of the bowels remains ineffective goes without saying. I wish also to state distinctly that in cases of chronic colic (paralysis of the cæcum or colon), I have generally found the venous injection of the drug to act merely as a palliative; in such cases the colic attacks have returned, for the most part after the lapse of a few days. Yet, apart from these, there remains a very considerable number of cases in which chloride of barium, when the proper dose is given, brings sure and speedy help. That the effect of the drug is to produce sometimes on the bowels for the next

two to three hours after administration, painful sensations (colic symptoms) is not a serious objection, considering its value.

"The administration of chloride of barium through the right or left jugular vein is generally the most successful in horses. If in doing this the head of the horse is kept as high as possible, the operation is safe and easy. A canula of suitable width and with a convex point (as made by Hauptner, of Berlin, to my order) may be easily introduced through the skin into the jugular, and then the dilution of the chloride, already prepared and put into a syringe, may be easily injected into the vein through the canula held by two fingers. With a little practice, the surgeon will perform this operation as easily as a subcutaneous injection. I have not noticed for a long time past any trace of inflammation in the jugular veins of horses thus treated.

"It is a very good plan to keep carefully weighed doses of the chloride ready for venous injection in dry, well-corked phials, which would hold about 10 grammes of water. No change either in quantity or quality of the drug is produced thereby. In case of need the dose may be diluted with water in the phial, and this occupies scarcely a minute. The dilution is then to be poured into a small saucer, from which it may be absorbed by the syringe. To keep the drug for any length of time in aqueous solution is not advisable, as evaporation takes place through the cork, and the effect of the drug becomes uncertain.

"I will give the results of a case that came under my notice on 13th July last. On the evening of that day, a Belgian mare, a strong, heavy animal, was brought to me. She had been ill for three hours, and the surgeon, who attended her and came with her, told me he had first given her extract of aloes inwardly and then, at 6.30 p.m., one-tenth gramme Physostigm. sulph. subcutaneously. I examined the animal at 7.30 p.m., and found, in addition to severe pains, pretty severe intestinal flatulence, short, ringing sounds in the bowels—occasionally the "sound of falling drops." Pulse 68, breathing 40 and snorting, frequent cowering, and all the other indications of severe intestinal pain. I had her walked about the yard, and observed that she strained from time to time at the rectum, and vented two balls of dung and a quantity of wind, which I attributed to the operation of the physostigmin. In the course of the next quarter-of-an-hour, the inflation of the belly increased, and the breathing became more laboured. I determined, therefore, in view of the symptoms, and in consideration of the fact that one and three-quarter hours before, a subcutaneous injection of one-tenth gr. of physostig. sulph. had been given, to administer a weak dose of chloride of barium intravenously, in order to compel stronger bowel-contraction, and thereby expulsion of the intestinal gas. I ordered a dilution of seven-tenths gramme chloride of barium in six of water (equal to chloride of barium 11 grains, water 1½ drams), and had this injected into the right jugular. In two or three minutes the animal showed great straining at the rectum; this went on for ten minutes, and during that time the mare voided a small quantity of fæces. The painful sensations were not much stronger than before. After the mare had been brought into the stable, she lay down at once, and tried, from time to time, to turn herself. Within the next half-hour great quantities of intestinal gas were expelled through the rectum at short intervals, and thereby the inflation of the flanks was visibly reduced; occasionally there were to be noticed sharp spasms of intestinal pain, but about 9.30 p.m. (an hour after the injection), the mare was lying quiet. She was eating oats and hay next morning with vigorous appetite, after having copiously defecated during the night, and was evidently quite cured."

A Case in Point.

Veterinary Surgeon Carl Angerstein of Bützow reports the following cas

to the *Berliner Thieräztliche Wochenschrift*, as showing the value of Dr. Dieckerhoff's new treatment of colic:—"On the 8th June last, at 5 p.m., a mare about 10 years old and weighing about 10 cwt., was brought to me for treatment. It was reported to me that she had shown symptoms of colic since 4 a.m.; about 10 she had voided a small quantity of hard fæces, and then flatulence had set in. The mare had had administered to her by her owner a quantity of strong coffee and an asafœtida pill, and had not defecated since. She had been fed on green clover for some days past, and had eaten a pretty large quantity of this on the evening before she became unwell. I found her pulse 78, breathing 36. Conjunctiva reddened diffusely; right flank very much swollen; intestinal sounds not perceptible. The animal was very restless and could scarcely be kept on her feet. Examination per rectum showed great accumulation of food masses in the great intestine, condition normal. Diagnosis: colic from constipation or over feeding. Treatment: cold water clyster, unsuccessful; at 5.50 p.m. I gave the mare a bolus, as follows:—

Barii chlor., 10 grammes.
Sodii chlor. 10 ,,
Rad. Rhapontic.
Aquæ quant. suff.

Twenty minutes after two little hard balls of fæces are ejected; patient continuously restless. Two hours and ten minutes after giving the bolus, about a wine-glassful of thin, watery fæces of a bright yellow colour trickles out of the rectum, and by the hand a soft mass, the size of a hen's egg and covered with slime, is removed from the same region. The peristalsis has in the meantime ceased, but occasionally intestinal sounds are to be heard for a second or two at a time in the great intestine; after 8 p.m. neither movement nor sound perceptible. About 10 p.m. I administered:—

Hydrarg. subchlor. 4 grammes.
Tart. emetic 8 ,,
Rad. Rhapontic. pulv. 12 ,,
Aquæ. quant. fiat bolus.

The patient now becomes very restless, alternately lying down and jumping up; at 10.30 p.m. she suddenly crouches together, remains lying on her side, her feet spasmodically drawn in under her body; she is perfectly apathetic and makes no response to either blows or cries; pulse, 78 and feeble, fluttering after every sixth or seventh beat; breathing 46, groaning; surface of the body warm. Exactly at 12 o'clock the patient jumps suddenly up and gas is expelled from the bowels, but only to a small extent. The animal stands or lies quiet till 6 a.m., the peristalsis is somewhat reduced; at 7 a.m and 9 a.m. fæces are passed. From this point onwards the animal is quiet, takes a few mouthfuls of water, and nibbles a little hay, but defecation has again completely ceased; not till the 10th, at 9.20 a.m., do fæces appear in any considerable quantity (after administration, at 9 a.m., of one-tenth gramme ether. sulph. subcutaneously); the peristaltic action is severe, and thin watery fæces are discharged about every 20 minutes or so. Towards midday the mare is able to take a little oats, a few raw potatoes, and some water."

To this communication Dr. Dieckerhoff appends a note in the *Wochenschrift* as follows: "It is very difficult to give the exact dose demanded by chloride of barium, when it is administered in the form of a bolus or in dilutions. As we all know, it is not always possible in such cases to prevent some of the drug from being lost. As the absorption of exactly measured doses of chloride of barium is more easily and more certainly attained by intravenous application, I always employ this method and this alone in the treatment of colic, in the quantities given above; the results are always excellent, except when there is incurable stoppage of the bowels."

Notes and News from Foreign Journals.

A Triple Birth.—M. A. Lucet states that in the month of May, 1892, he was sent for at four in the morning to deliver a six-year-old cow, which already, an hour previously, had given birth to a perfectly-formed living calf. The second calf, said the owner (who was sure it was a case of twins), was badly placed and would not come out. M. Lucet soon found out the cause of the trouble; the uterus still contained *two* calves, which both showed front presentation, and were in the dorso-sacral position, and were obstructed by the pelvis. One of them, however, was farther forward than the other, and this latter was pushed back for a moment, whilst the former was being dragged out. In a few minutes delivery was accomplished, but unfortunately the two last-born calves died. The first-born, which afterwards throve very well, showed back presentation at birth, and was in the lumbo-sacral position. The mother did not suffer in any way from this gestation and triple birth.—*Recueil de Médécine Vétérinaire.*

An Egg with Three Yolks.—The same surgeon reports that he received some time ago from one of his clients a hen's egg of extraordinary size but normal shape. It weighed $5\frac{1}{4}$ ounces, averaged and measured "from pole to pole" $4\frac{1}{3}$ inches, or $8\frac{2}{3}$ inches at its greatest circumference, and 7 inches round the middle. The egg was carefully emptied of its contents, and it was found to contain three yolks of ordinary volume.—*Ibid.*

Precocious Lactation.—A surgeon was called in on 10th May, 1893, to see a heifer twenty-two months old, which had been pregnant since the 22nd October preceding, and which for some days past had been showing an affection of the udder. The animal showed all the signs of being in general good condition. She showed, it was true, a distinct swelling of the udder, which was bulky, red, doughy, hot and painful, but this affection was purely local, and had no influence upon the great functions. The teats were quite supple, and, when squeezed, allowed colostral milk to escape, which was perfectly normal. Being persuaded that it was merely a case of physiological congestion, and nothing more, the surgeon ordered anointing of the udder with *unguentum populeum* and frequent squeezing of the teats for the purpose of drawing the gland and relieving it of the product of secretion. The surgeon again visited his patient on the 21st of May, and found that everything had happened as expected. The congestion had disappeared, the secretion of milk was established, and this heifer, twenty-two months old, in the seventh month of her pregnancy, was giving six to seven quarts of good milk every day. This abnormal secretion went on till she calved, and then it doubled, according to the report of the owner.—*Ibid.*

Importation of Diseased Sheep.—With reference to the case of the infected sheep landed at Dunkirk and Havre, as reported in our June issue, a question was asked in the French Senate. Our readers will remember that the sheep were infected with scab and had come from South America. The Minister of Agriculture replied as follows: "We stop at the port of entry all living sheep coming from the Argentine Republic and we compel the importers to proceed at once to slaughter, at the port of arrival, all the sheep, not yet affected, that have been in contact with the diseased animals; we order quarantine and the treatment of the disease till a cure is effected and then the slaughter of the animals that have been infected; we likewise give strict orders for the disinfection, at the expense of the importers, of all places which the animals may have soiled by their presence. Equally rigorous measures are adopted for sheep that might find their way into France by land as well as by sea; thus not only do we prohibit the entrance of animals coming from foreign countries where disease has been reported, but we forbid even the transit through France in sealed trucks of sheep from infected

countries." If no more stringent measures have been taken, it is to avoid secret shipments and the giving of offence to neighbouring powers. It appears, however, that some of the Argentine sheep had, in spite of all this, got as far as Troyes (Aube).—*Ibid.*

Immunity against Foot-and-mouth Disease by use of Iodide of Potash.—Professor Pick, of the University of Prague, writing to *La Clinica Veterinaria*, states that, with a view to the treatment of some syphilitic children, he arranged with a farmer to administer iodide of potash to two cows of his herd of sixty-eight, in order to employ the milk of these cows, which would thus be rendered medicinal. One cow got 12 grammes (185 grains) of iodide of potash daily for eight weeks on end; the other for ten weeks. Meantime, aphthous fever broke out in the establishment and two cows became ill. In order to shorten the course of the disease, the owner had the whole herd inoculated, including the two cows under treatment with iodide of potash. Although these two remained in the midst of the infected animals, they remained quite healthy. The effect of iodide of potash on cattle is, according to Pick, the same as on the human subject; after a few days all the symptoms of acute iodism appear—increased secretion by the nasal mucous membrane and flow of saliva; the appetite remains keen and thirst increases immensely. After a time the symptoms abate a little and remain moderate during the course of treatment. The secretion of milk increases to such an extent that cows which give two to three gallons per day give, under the iodide of potash treatment, as much, sometimes, as four gallons, because they absorb more liquid. The worth of these isolated observations is difficult to estimate, as we do not know how long the immunity exists, and whether the iodide of potash has a curative influence on aphthous fever, but the case is worth the attention of veterinarians.

Ewe's Milk in the Treatment of Disease.—Dr. Auerbach, at a meeting of medical experts in Berlin, stated that ewe's milk, as taken by him from an East Frisian sheep, contained double the quantity of albumen and fat to be found in cow's milk, namely, five to six per cent. of albumen and six to eight per cent. of fat, while the saccharine content is mostly small. For the nourishment of sick persons with a milk thus composed there is this advantage to be claimed, that the stomach is less heavily loaded and the body is equally well nourished. In addition, the taste of the milk is sweet and pleasant. Ewe's milk has helped to bring about recovery from acute diseases, and it is useful in many chronic ailments, such as phthisis, nephritis, heart-disease, anæmia, chlorosis, etc.

A Visit to the Sultan's Stables.—Professor Cornevin, of Lyons, contributes an interesting paper to the *Journal de Lyon*, describing a visit to the royal stables at Constantinople. He says the stable, which is very extensive and well arranged, contains 204 horses, and is divided into two sections. One of these contains 60 carriage horses, exclusive of big horses, from Normandy, Holland, and North Germany, used for the state carriages. The other section contains 144 horses. Every province of the Empire and of the tributary states is represented, but the horses principally come from the district about Bagdad, Mossul, Damascus, and Upper Egypt. In spite of the differences of origin, colour, size, form of crupper, and tail, all the horses possess a common character, which enables us without any hesitation to classify them under one heading—the Arabic. Professor Cornevin found no horse which recalled the Berber breed. All the horses had the same broad, flat forehead, delicate features, big, prominent eyes, and bright but gentle look. The majority of the horses are dappled grey, others are bays or browns; there are very few black horses among them. The average height is 1·50 metres (about 15 hands). The mane is thin, but the tail, on the other hand, is very long and touches the ground; the hair in 95 per cent. is smooth

and soft, in the other 5 per cent. it is more or less curly. The legs are very thin but very shapely, and have strongly developed chestnuts. The cruppers vary greatly; they are almost straight in the majority of the animals, and in others more or less sloping. All the horses are very tractable and obedient. It is a curious fact that some of them are maneless; these come from the neighbourhood of Merv, are mostly bays, seldomer black, and are well built animals; their manes are pulled out in their native country. The entire stud of the Sultan numbers at the present moment 540 animals, including 60 brood mares. The great majority of the animals are Arabs, but Professor Cornevin saw an Indian pony and a few Hungarian and Anglo-Norman mares, and several cross-breeds of Hungarian-Arabic parentage. Sixty per cent. of the mares are covered every year, and, in order to obviate sterility, dilatation of the mouth of the uterus is regularly practised. Gestation lasts from 11 months 6 days to 11 months 11 days; colts are carried 2 to 3 days longer than fillies. The foals are allowed to remain with their mothers for 6 months, and then they are amply supplied with good fodder, observations having shown that the average size of the Arab horse can best be kept at a high level by this means.

Notes and News.

Reported outbreak of disease in Nova Scotia.—Fears were entertained that the disease reported to have broken out in Nova Scotia was of a contagious type. The matter has been investigated by Professor McEachran, who has been able to trace the disease to a poisonous plant. From the meagre information at hand, I think the disease is biliary cirrhosis of the liver described in the April number of this Journal.

Epizootic Sore Mouth of Sheep.—This is the title of a paper published in the *American Journal of Comparative Medicine and Veterinary Archives.* The disease appears to attack the lambs about November, and lasts a month, being fatal to many, through the emaciation produced rendering the patient unable to withstand the rigours of winter. The disease is characterized by an eruption on the soft skin about the mouth, rarely, it appears, extending to the mucous membrane lining the oral cavity. The disease is stated to be contagious. The treatment consisted in the application of carbolic acid ointment. The disease is very general in the United States, and appears to affect a large proportion of the animals in a flock—indeed, it is looked upon as one of the things that lambs must have. The disease is almost identical with stomatitis, which is a well-recognized affection among sheep and lambs in this country. Here, however, the buccal membrane is also the seat of a vescular eruption. As pointed out by Mr. Walker, in last month's Veterinary Journal, stomatitis is a common affection of pups and young dogs. Here again the buccal membrane, as well as the skin outside, is attacked.

The veterinary medical societies of this country, who so frequently have to deplore the lack of attendance and the want of interest shown by their members in the proceedings, should take a hint from our enterprising American cousins and rouse the dormant enthusiasm of their subscribers by a "Clinical Entertainment":—"On Thursday, June 13th, 1895, the members of the California State Veterinary Medical Association assembled, by invitation of Dr. C. B. Orvis, at his infirmary at 258, Lafayette Street, Stockton, to participate in a clinical entertainment. The first operation on the programme was the reduction of a ventral hernia by Dr. H. A. Spencer, assisted by Dr. Archibald. The operation was the radical one for the cure of a hernia, and was performed under strictly antiseptic and aseptic rules. The next operation was performed by Dr. Lemke. This was the case of an old, long-standing fracture of the scapula at its upper third, from which a

fistula resulted, which necessitated the trephining of the scapula. Other operations of minor importance followed, closing the entertainment, which was voted an entire success by the members present.—R. A. ARCHIBALD, *Secretary.*"

DOG SHOWS.—In an interesting disquisition on the development of dog shows since the first exhibition at Newcastle-on-Tyne in 1859, our esteemed contemporary, *Land and Water*, goes on to enumerate the gradual rising of these shows at Birmingham (1859), London, Leeds, and Manchester (1862), after which date the Prince of Wales became interested in the fancy, and the Kennel Club was formed in 1874. Popularity of these experiments involved the necessity of buildings for feeding and benching these canine pets. The principal difficulties lay in the direction of the feeding and benching of the dogs. Spratt's Patent, therefore, seeing that there was an opening for the extension of their business, and at the same time benefitting the class of animals, for the wants of which they were specially catering, commenced to undertake the contracts for the supply of food to the competitors and with the happiest results. Instead of the horrible sloppy messes of half-cooked meal, in which lumps of extra dubious looking fat and flesh were present, the dogs are now dieted on good sound biscuits, in the composition of which meat of the best quality occupies a considerable share. Spratt's Patent are now entrusted with the feeding, in fact they are catering for the wants of the canine competitors at all the leading shows, and no other firm has ever fed the dogs at any of the Kennel Club exhibitions. The institution of their benches and partitions marks a great advance in dog shows, for just as the adoption by committees of Spratt's patent cakes convinced owners that their favourites would be well fed, so did the appearance of the new benching assure them that the animal would be more comfortable.

SPECIAL MEETING OF THE NEW YORK STATE VETERINARY MEDICAL SOCIETY.—At the special meeting of the New York State Veterinary Medical Society, held in the lecture room of the New York College of Veterinary Surgeons, New York City, on June 11th, 1895, the roll call showed a large number of veterinary surgeons present. The reading of the minutes of the previous meeting was dispensed with. The President, Dr. R. S. Huidekoper, explained in a few remarks the reason for calling this special meeting. He said that it was in order to comply with a clause in the bill which had recently become a law by being signed by the Governor, wherein the New York State Veterinary Medical Society are required to nominate ten members of their society, whose names are to be transmitted to the Board of Regents, who, according to the law, are to appoint five members out of the ten submitted to them: the five members appointed to act as a State Board of Veterinary Examiners, and to hold office for five years. The following are the names of the ten members who were chosen by ballot of the members present to be submitted to the Board of Regents for them to make their appointments from: Drs. R. S. Huidekoper, Nelson P. Hinkley, Claude D. Morris, William Henry Kelly, John Wende, W. L. Baker, Arthur O'Shea, John A. Bell. H. D. Hanson, and Professor James Law. There was also a resolution offered giving notice to the Society that at the next annual meeting there would be a resolution offered to amend the by-laws so as to read that all legally registered veterinarians in the State of New York be eligible to present their applications to become members of the New York State Veterinary Medical Society. This resolution was accepted and ordered spread on the minutes. The meeting then adjourned until the next annual meeting, which will be held in the lecture room of the New York College of Veterinary Surgeons, No. 154, East 57th Street, New York City, September 5th and 6th, 1895. NELSON P. HINKLEY, *Secretary.—American Veterinary Review, August*, 1895.

CANADIAN CATTLE DISEASE.—Scotch farmers and others interested in the Canadian cattle trade are meditating an appeal to the new Minister of

Agriculture. The old Minister proved immovable on the subject. To the last he adhered to the policy of keeping our ports closed against the industry. He may plead, of course, that he acted under the advice of his veterinary advisers, but he must, at the same time, be aware that the closure edict met with little support from experts outside of the Department. If Lord Burghclere—to give Mr. Herbert Gardner his new title—and the officials of the Board were on one side, they had ranged on the other such eminent veterinarians as Principal Williams, Dr. Sims Woodhead, Mr. Hunting, and M. Nocard. They had also the strongest possible evidence from the Dominion authorities that not a single case of pleuro-pneumonia had been discovered among their herds. In these circumstances the Board of Agriculture would have been amply justified in adopting one of two courses. They might either have revoked the order which put a stop to an extensive and rapidly increasing industry, or they might have taken steps for carrying out an independent inquiry into the whole matter. With the view of facilitating the latter, the Canadian Government offered to bear the cost of an investigation on the spot as to the condition of their cattle. But the Department did neither the one thing nor the other. They persisted in keeping the doors of the ports shut. Their reason for doing so was of a singularly weak kind. It simply amounted to this, that out of more than a million cattle shipped from the Dominion since 1880 to 1892, and out of 200,000 slaughtered at the ports of landing after the issue of the Order in Council, about a dozen animals were found suffering from lesions in the lungs of a particular type alleged by the Board to be pleuro-pneumonia, but declared by outside experts to be not contagious, but only "transit" pneumonia. It may be that after taking up such a positive attitude on the question, the late Minister of Agriculture found it difficult to climb down. Mr. Walter Long, happily, is in a very different position. He is committed to nothing, and can look with a perfectly unbiassed mind on the communication about to be submitted to him. It is easy enough to form some idea regarding the nature of that communication. First of all, the advocates of the removal of the restriction will be able to argue that its continuance is not warranted by any cases of genuine pleuro found amongst the cattle recently landed from Canada. Secondly, they can point to the fact that the Belgian Government are proposing to re-open their ports to the trade under inspection. And lastly, they can submit the latest report on the subject prepared by the Dominion Minister of Agriculture. Mr. Angers' report is a document of great ability. It sets out with the obvious truism that the interests connected with the health of animals in Canada are of vastly greater magnitude than any that can possibly attach to the conditions of any market, however valuable, for surplus stock. The value of neat cattle and their products in Canada, as established by the census of 1891, reached the high figure of close on one hundred and forty million dollars, while the development of increase since the date of enumeration has been very rapid. All the administrators of the Canadian Department in matters pertaining to the health of animals have this great industry and how to protect it from diminution by the entrance of disease always in view. Such a circumstance, as Mr. Angers argues, may be accepted as a reason why in any controversies relating to cattle disease, neither he nor his officers are likely to be misled by the consideration of obtaining an improvement of conditions in a market for surplus live stock. He then proceeds to summarise the whole "case" for the Dominion. As to the persistent and reiterated demand for information as to the existence of pleuro-pneumonia, Mr. Angers says this cannot be done for the very simple reason that no such disease can be found in Canada. The inference of the British Board of Agriculture, that the disease found in the few animals landed at Liverpool and other ports must have been contracted in

Canada before embarkation, is declared to be unsupported by evidence. On the contrary, there is nothing to show that it might not be contracted in the course of transit. According to the expert testimony, the lesions were of recent origin. In all the many thousands of Canadian animals slaughtered in the United Kingdom not a single case of old or encysted pleuro has been found, a condition which would have been impossible if the disease, as alleged, prevailed in the Dominion. Finally Mr. Angers showed the absurdity of the conclusion reached by the Board of Agriculture that serious disease exists in Canada, and that it is contagious pleuro of a special type, but not different in its "contagious and fatal effects" from the commonly accepted type known in Europe and elsewhere. "How," he exclaims, "can this be, when the disease cannot be found in Canada, and when it has never, in any part of the Dominion been ever heard of?" The conclusion he reaches is that the continuance of the restrictive order requiring the slaughter of Canadian cattle at the port of arrival, for the reason of the alleged presence of the disease of pleuro in Canada is not and cannot be supported by any proof of its existence. "If you doubt my word," Mr. Angers asks in effect, "come and see for yourselves." He repeats the offer made in 1892 that the Dominion Government will gladly pay the expenses of any inspection made in Canada by representatives of the British Board of Agriculture. From this report alone any deputation that may be appointed to wait on the new Minister will be able to cull arguments of the most forcible nature. It may be said that Mr. Long, like his predecessor in office, can act alone on the advice of his permanent officials, and that if that is still adverse to the opening of the ports, the deputation will simply be bowed to the door. But such a course of action on the part of the new Minister is very doubtful. The probabilities are that he will decide this matter for himself. He has in all likelihood discovered before now that a good deal of dissatisfaction exists among the veterinary profession regarding the present staff. A Committee of the Royal College of Veterinary Surgeons has recently drawn up a report on the subject, in which some very plain language is used. Some of the changes made on the retirement of Professor Brown from the Directorship of the Veterinary Department of the Board are declared to be a reflection upon the capacity of the whole body of the profession, and as one calculated to destroy the efficiency of the Department. The Committee goes on to protest against a so-called re-organisation which "removes from the hands of a professional expert the control and direction of a department created for, and solely concerned with, the suppression of disease amongst live stock." As to the change of the name of the department from "Veterinary" to "Animals," the Committee can only explain it on the supposition that the interests of the stock-owner have been overlooked and the interests of the veterinary profession ignored. There seems to be in this report more material on which the deputation may work. The Board of Agriculture, like the Board of Trade, appears to stand in need of reform. It remains to be seen whether Mr. Long intends to act the part of reformer.—*Glasgow Herald.*—In the House of Commons on August 22nd, Mr. White asked the President of the Board of Agriculture, whether he will lay upon the table the official reports of the alleged recent cases of pleuro-pneumonia in two Canadian cattle recently landed at Deptford; whether he was aware that a meeting was held in Glasgow on Friday last at which Principal Williams, of the New Veterinary College, Edinburgh, exhibited limelight views of sections of the lungs of cattle, showing the difference between healthy lungs and those affected by contagious pleuro-pneumonia and by bronchial pneumonia, and demonstrated that the lungs of suspected Canadian cattle were different in appearance from the diseased sections thrown on the screen; and whether, in view of the conflict of the opinions of the Canadian and many British experts with those of the

experts of the Board of Agriculture, and in view of the assertion of the Dominion Government that contagious pleuro-pneumonia has never been known, and cannot be found or any trace of it discovered in any part of the Dominion, he will accept the invitation of the Dominion Government to send one or more veterinarians to Canada at its expense to elucidate the facts.—Mr. Long said that the report made to him by the chief veterinary officer of his department was a very short one, and could not be conveniently presented as a separate paper, but he would be very glad to supply the hon. member with a copy, and allow him to make any use of it he thought desirable. He had seen the report of the meeting to which the question referred, and he was aware of the views Principal Williams held on the subject. The conclusion to which his predecessor (Mr. Gardner) arrived, however, appeared to him fully justified. It did not seem to him likely that the despatch of experts to Canada would be of assistance, his action being based upon the actual detection of disease in the cattle landed in this country. Mr. White asked whether, in view of the advance of veterinary science by practical experiments, the Board of Agriculture were prepared to carry out any practical experiments when any suspected cattle were landed in this country. —Mr. Long said he did not think there was any necessity for special experiments. The advisers of the Board of Agriculture were perfectly satisfied with the result of their examination, and the Board had confidence in them. The Board did not, therefore, think they were called upon to make further experiments.—Mr. Kilbride asked if it was possible that cattle leaving Canada in a healthy state might contract peuro-pneumonia in transit.—Mr. Long said he was not quite sure that that was an accurate statement, but undoubtedly cattle might leave Canada without showing any evidence of pleuro-pneumonia, and no doubt the disease might be developed in the course of the journey, and be discovered when the animals were landed here. The duty of the British Government was simply to see that no diseased cattle were landed here.—[From the answer to Mr. White's question it will be gathered that the new Minister of Agriculture intends to follow the footsteps of his predecessors, not only to exclude Canadian cattle, but to discourage practical experiments to determine the contagious or non-contagious nature of the American lung disease. The statement made by Mr Long, that cattle from a non-infected country, as Canada is proved to be, might develop contagious pleuro during the course of the journey, is so absurd that one cannot help smiling at it.]

EDITORIAL NOTE.

Owing to pressure on our space this month, we are unable to print several important communications. We hope to produce these in our October number.

Communications, Books, Journals, etc., Received.

Russell's "Scientific Horse Shoeing" the Robert Clarke Company, Cincinnati, U.S.A.; Report of the Director of the Colonial Bacteriological Institute for 1894, Cape of Good Hope; "Agricultural Journal," Cape Colony; The "American Journal of Veterinary Medicine and Archives;" "Modern Medicine and Bacteriological Review;" "De l'unification de la nomenclature en anatomie Veterinaire;" Rapport de Mr. le Dr. P. Martin professeur a l'ecole veterin de Zurich; I. T. Duncan, M.D.V.S., professor of anatomy, Ontario Veterinary College; C. Drabble, M.R.C.V.S., Bradford; Joseph H. Carter, F.R.C.V.S., Burnley; Colonel Lambert, C.B., Army Veterinary Department; Veterinary Department, Privy Council Office, Dublin Castle; R. Rutherford, F.R.C.V.S., Edinburgh; Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); Annales de Médecine Véterinaire (Brussels); L'Echo Vétérinaire (Liége); Berliner Thierärztliche Wochenschrift (Berlin); Bericht über das Veterinärwesen im Königreiche Sachsen für (Dresden).

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

OCTOBER, 1895.

ESSAY ON ANÆSTHESIA.*

BY MR. T. R. MULCAHY.

(*Continued from page* 159.)

Ether.

THE action of ether differs very little from that of chloroform; it is weaker, hence it must be administered in a more concentrated form. To effect this, it is necessary to use a muzzle or to apply it to both nostrils. The proportion of ether to air should be about 70 per cent. of ether. Ether vapour irritates the air passages very much, and should therefore be mixed with some other anæsthetic. Ether also causes much more excitement than chloroform, and under it anæsthesia is less profound and passes off more rapidly. The heart vessels and respirations are less depressed, the heart continuing to beat after respiratory arrest.

These facts go to prove that ether is the safer anæsthetic; yet it has many disadvantages, not the least being its highly inflammable nature, its irritating action on the respiratory mucous membrane, and its requiring a much larger dose. It is, for these reasons, seldom employed alone.

Doses.—The quantity of ether required to produce anæsthesia, as with chloroform, varies according to the mode of administration, but is always larger than the amount of chloroform. Horses and cattle require from 5 ozs. to 10 ozs.

Contra-indicated.—Ether is contra-indicated in operations about the mouth in some animals, for air must gain access and destroy its effects. It also causes the secretion of a thick mucus, which may interfere with the operation. It is highly dangerous to use ether in the vicinity of lights.

Ether should not be used on patients with any irritation of the air-passages. In very old animals it should not be used, as the arteries are sometimes brittle and may be ruptured as a result of the increased pressure produced.

Post-mortem.—Death takes place by respiratory arrest. If the examination be made soon after death, the odour may be found in the spleen, liver, and kidneys. The blood is thick and dark, the lungs congested, and the bronchial tubes may contain mucus.

Nitrous Oxide is never used in veterinary practice, on account of its expense and the elaborate appliances required for its administration.

Anæsthetic Mixtures.—The chief mixtures used by veterinarians are the A.C.E. and Vienna mixtures. The former contains of alcohol one part, chloroform two, and ether five.

It is indicated in patients with lung affections, but in the larger animals it is too weak for ordinary use. It is used most in dog practice.

The Vienna mixture consists of chloroform, one part to three parts of ether. It is a safe mixture, and may be used where chloroform and ether alone are contra-indicated. The mixture most commonly used for the larger animals consists of equal parts of chloroform and ether. The objection to mixtures is that the ingredients do not evaporate in the proportion in which the fluids are mixed.

Local Anæsthesia.

By local anæsthesia is meant the rendering of a part insensible to pain, without disturbing general consciousness. It has the advantage of being attended with a minimum of risk, and of being practicable when the animal is standing. It is effected by paralysing the sensory nerves of the part acted upon. The chief agents are cold and cocaine. Ether is used to produce great cold.

Method by Ether.—Ether, when applied in a fine state of division, abstracts heat rapidly. If the application be continued for some time, the great cold produced causes paralysis of the cutaneous nerves. The deeper structures are not affected unless exposed to the freezing influence. The hair should be first removed, and the part well cleaned. The ether is then applied by means of an atomiser, until the part is rendered insensible to the point of the knife.

There are serious disadvantages connected with the local use of ether. Where the actual cautery is to be employed, its use is obviously impossible. Again, there is always some moisture about the tissues which is frozen, coating the knife, and obscuring the vessels and nerves.

If the freezing process be carried too far, a slough may form from frost-bite.

Because of these disadvantages, cocaine is to be preferred as a local anæsthetic.

Cocaine is now the chief and best of local anæsthetics. It is an alkaloid obtained from the leaves of the "Erythroxylon Coca," a plant indigenous to the Peruvian Andes, and held in great esteem by the native Indians, who chew the leaves and give it to their horses, upon which it has the power of greatly diminishing the desire for food, and also enables them to undergo a greater amount of labour.

The hydrochlorate of the drug is generally used on account of its solubility. Solutions are very prone to decompose. It is therefore advisable to prepare a fresh solution each time of using.

The solution is either injected subcutaneously or painted over the part. A 10 per cent. or 20 per cent. solution is commonly used hypodermically; about 10 minims of such a solution being sufficient to anæsthetise a horse's leg before the operation of neurotomy is performed.

In this operation it has the advantage (disadvantage by some) of rendering the nerve insensitive to stimuli.

A 4 per cent. solution is used in small operations on the eye, a part which never should be operated on without it.

Ten minutes or a quarter-of-an-hour should be allowed in order to give the drug time to act before operating.

In protracted operations, it may be necessary to administer a second injection.

In using the actual cautery over a large surface, the injection should be made at two or three different points, or what I consider better, viz., that the solution be well rubbed in for two or three minutes some little time before firing.

Some advise its use for such operations as docking. I must admit I am not quite so humane as those good people.

A 5 per cent. solution is used by means of an atomiser on the inside of the throat.

Cocaine is not devoid of dangerous properties, but in the larger animals, the quantity used to produce local anæsthesia is far too small to have any systemic effects.

It diminishes the secretion of saliva and is thus doubly useful in operations on the mouth. Small doses constrict the blood vessels, and thus diminish hæmorrhage.

In the dog a small dose acts as a moderate stimulant; larger doses produce excitement.

Poisonous doses procure convulsions and afterwards paralysis. The heart is depressed, and death may follow from its stoppage.

PASTEUR AND HIS WORK.

PROFESSOR PERCY FRANKLAND, F.R.S., Professor of Chemistry in Mason College, Birmingham, delivered the second evening discourse to the members of the British Association on Monday, the 16th September, taking as his subject the work of Pasteur and its various developments. The following is an abstract of the address:—It may be said without exaggeration that there is no scientific name which is so universally known, and in so many different connections, as that of Pasteur. The chemist, physicist, biologist, and medical man each view Louis Pasteur as the founder of some of the most important, novel, and fruitful departures in their several branches of knowledge, whilst in the worlds of industry and agriculture, his influence has also been deeply felt and gratefully acknowledged. The first subject of research taken up by Pasteur, at the early age of twenty-five, was of such an abstract character, that if his career had terminated with its completion, the general world would have never known his name, and yet the initiated few would have been able to recognise one of the shrewdest scientific observers of this or any age.

First Discoveries.

His strict mathematical and chemical training led Pasteur to be fascinated with the wonderful geometrical forms which are assumed in solids, in what is generally called the crystalline state; and the particular phenomenon which attracted his attention, was the existence of two tartaric acids apparently identical in chemical composition, in chemical properties, and in crystalline form, and, in fact, in all respects excepting alone that the solution of one had no effect on polarised light, whilst the solution of the other turned the plane of polarisation to the right. Submitting these crystals to the most searching scrutiny, Pasteur found that there were some minute faces on the crystals of the active tartrate which were absent on the crystals of the inactive tartrate, and such importance did he attribute to these little faces that he recognised that their presence relegated the substance possessing them to an entirely different class from that to which belonged the substance possessing them not. The crystals of the inactive tartaric acid which was destitute of these little surfaces, he found were symmetrical, whilst the crystals of the optically active tartaric acid, he found, were unsymmetrical, or dissymmetric, as he called it. His speculations, subsequently developed by Wislicenus, Le Bel, and van't Hoff, led

to the foundation of that most fascinating and fertile field of chemical science, now known as stereo chemistry, and prepared the way for some of the greatest achievements of modern chemistry, such as the artificial production of the natural sugars.

Researches in Fermentation.

Pasteur's genius was, however, not long to be retained in the exclusive service of abstract science. In the course of his experiments on the different kinds of tartaric acid, he was led to try the effect of submitting them to fermentation processes, and he found that the two oppositely active tartaric acids are physiologically utterly distinct, one of them being capable of undergoing fermentation by means of bacteria, whilst the other remained untouched. This striking phenomenon has been largely utilised by other investigators for the preparation of new optically active chemical compounds. Pasteur was thus drawn by accident as it were from the inanimate world of pure chemistry into the vortex of the world of life, and it was to the study of vital phenomena that practically the whole of his genius and energies were subsequently devoted. The frontier line which Pasteur crossed from the domain of chemistry into that of biology was at the time very ill-defined. The phenomena of fermentation which he had attacked were not generally regarded as vital phenomena at all, and it required years of patient labour before Pasteur was able to convince the scientific world of the truth of his statement that fermentation processes were the work of living microscopic organisms and that each fermentation process was the work of distinct organisms. Knowledge or appreciation of these classical researches has meant wealth to the brewer, the distiller, and the wine grower, and it is hardly an exaggeration to say that the brewer of to-day is able to stand the relentless taxation of the late Chancellor of the Exchequer as much through the labours of Pasteur and those who have succeeded him as through the unquenchable thirst of the British proletariat.

Studies in Bacterial Life.

Extensive as were Pasteur's researches in the domain of fermentation, there were processes which time did not permit him to investigate before he was hurried on into other fields of scientific interest or practical utility. His intuition, however, led him to recognise as a fermentation process the transformation known as nitrification, consisting in the conversion of ammonia into salts of nitric acid which takes

place on such an extensive scale in all the fertile soils of the earth. This process, from being regarded as a case of simple chemical oxidation, is now recognised as dependent upon the action of bacterial life; and the particular bacteria responsible for this action, after long eluding the search of the investigator, have during the last few years been isolated and described. In the course of these researches the astounding fact has been brought to light that in these nitritising bacteria we have living cells which are capable of flourishing and multiplying in the entire absence of organic matter. Even still more important revelations in vegetable physiology have resulted from the careful study of bacteria in recent years, for it has been shown that certain green plants obtain the nitrogen which they require for their nutrition from atmospheric nitrogen by means of certain bacteria which infest their roots. These bacteria produce nodular excrescences on the roots, but, when they are carefully excluded, these root-nodules do not make their appearance, and the assimilation of free nitrogen ceases also.

The Bacteria of Diseases.

Soon after he had commenced to study the bacteria of particular diseases he was impressed by the fact that often in the course of cultivation in artificial media outside the body their virulence became diminished to such an extent that they ceased to be fatal on inoculation into susceptible animals, but the most important discovery in this connexion was that the animals inoculated with such enfeebled or attenuated cultures were found to have become protected from the disease even when subsequently inoculated with the most virulent cultures of the same organism. Pasteur next proceeded to grapple with a disease affecting both man and animals, *i.e.*, hydrophobia. This problem was surrounded with special difficulties, over which, however, the genius of Pasteur triumphed, and the attenuated virus of hydrophobia was successfully prepared, and by several different methods.

PHOTOGRAPHY APPLIED TO VETERINARY SCIENCE.

BY "O."

Now that the processes of photography have been so much simplified by the introduction of dry plates and other appliances, it is rather strange that more veterinary surgeons do not avail themselves of the art-science, as it has been called, for the purpose of recording interesting cases. Written descriptions are, of course, of very great value, not

only for future reference by the recorder himself, but by his brother practitioners but, unfortunately, the faculty of verbal description is not always sufficiently developed to permit of the conveyance in so many words of all that is meant, and indeed in a number of cases words by themselves are inadequate. To those who experience a want of time for writing out lengthy cases, and to those who have the time but do not consider themselves to possess a command of suitable language, photography affords a ready and permanent means of placing before their fellows a true account of what they themselves have seen. An illustrated article is, of necessity, more valuable than a similar article not so embellished. We would, therefore, impress upon our readers the utility of photography in daily practice; even should the practitioner not desire to publish his cases—which is always to be deplored—still photographs will allow of a future critical comparison of similar conditions.

Photomicrography is perhaps a little too complicated for the average busy surgeon, yet even this branch is not over difficult, if one is willing and able to devote a little time and patience to it, and when combined with the manufacture of lantern-slides, it is of great assistance to anyone who wishes to point out to an andience the minute pathological changes in a tissue. It is an axiom that no two persons see the same thing in exactly the same way, in fact, it has been said that if a piece of common chalk be placed upon a table, and half-a-dozen people asked to describe what they see, the result will be half-a-dozen different descriptions; the same remark might, with equal—nay, with more—propriety be made in connection with microscopic objects. This fact renders drawings always more or less misleading, as the personal factor will creep into them. With photography the personal factor is, if not entirely removed, reduced to a minimum.

The pecuniary consideration need not, nowadays, deter anyone from investing in photographic apparatus, as it is really very slight, and by no means commensurate with the advantages which accrue from their use.

Let us take a lesson from the medical profession, in which photography is far more extensively used than in ours, with the result that the illustrated medical periodicals contain in almost every number rare and interesting conditions.

It should be borne in mind that photographs intended for reproduction should be on highly glazed paper, as matt-surface prints never come out very well by the processes usually employed for the purpose of illustration of periodicals, &c.

A NEW METHOD OF ILLUMINATION FOR PHOTOMICROGRAPHY.

BY JAMES HUNTER, F.R.C.S., F.R.S.E., ETC., PROFESSOR OF PHYSIOLOGY, NEW VETERINARY COLLEGE.

THE following short account has reference to a matter in which the ever-increasing class of readers interested in microscopical studies, will feel interested.

In these days of profuse and accurate illustration, microscopical details stand first, perhaps, in the necessity for absolute truthfulness of rendering; so much so, indeed, that it has come to be an understood thing that in all cases where new or especially controversial subjects are under consideration, drawings by hand and eye are no longer satisfactory and conclusive, since a photographic method of delineation, however imperfect technically, is more likely to be "near the truth."

To those, however, acquainted with photographic manipulation, even in the easier and more certain branches of portrait or landscape photography, it is unnecessary even to suggest the possibility of the "picture" being *unlike* the subject. Professional photographers, at least, are no sticklers for the dictum that the "camera and lens cannot lie"; they have ample experience of the contrary, for while photographic methods are certainly free from any possibility of untruthful rendering to palpably enable them to corroborate or favour the *views* of the artist or his instigator, practically as well as scientifically there are several adverse conditions in the appliances, mechanical, optical, and chemical, which conspire to make absolute "truth" in a photograph next to an impossibility.

Leaving out altogether the chemical difficulties, as beyond the scope of the present issue, it is not difficult to see how the character and direction of the *lighting* is an important factor in all branches of photography, no form of lighting being so trying and difficult to operate with as that where the subject is placed directly between the lens and a bright light beyond.

One has only to look at the very partial success of the photographer in securing a truthful, not to speak of artistic, picture of such subjects as the tracery of the architectural details, curtains, &c., of a window which is directly in front of the camera with a bright sky beyond, to be convinced of a discrepancy. Now it is just this unsatisfactory condition of things, avoided if possible by the ordinary photographer, which is the ever-present state of matters with the micro-

photographer (usually styled by a usage absurd enough, "photomicrographer.") With all but opaque objects (a very small class indeed), we are virtually faced with this difficulty in trying to photograph microscopic specimens—we must photograph them right against a bright transmitted light.

Up till some five years ago, to judge from the accounts of those who have made photomicrography their study and practice, it seems that the object, when not merely illuminated by the diffuse light of the sky, or of a piece of magnesium ribbon burned some distance beyond it, has been made the locus of an *image of some luminant*. Where this image is that of the solar disc, as projected by a heliostal and condenser, the method is free from many sources of error which are present when the image of an artificial light source is employed. In a second paper upon this subject, given in the present number of the *Journal of the Scottish Microscopical Society*, the author discusses the sources of these errors by experiment and by geometrical projection, as well as by the usual rigorous methods known to theoretical opticians.

It is there shown that when an image of a flame is projected upon an object on the stage by a condenser, even of the most perfect kind, there is of necessity, chiefly from the *thickness* of that image, a numerous set of radiant points of light both above and below the plane of the object, which can by no means whatever, however perfect the object-glass, be brought to the same focal plane as rays emanating from the plane of the object itself.

From this reason, what ought to be the shades, were the object its own radiant, are illuminated with false or penumbral light, and thus no true sharp definition between light and shade can be secured when a flame image is used for illumination.

Several other disadvantages of this latter method, as being too technical, we will not quote, but next to that already mentioned, the disturbance of contour definition from the presence of "interference bands" is shown to have also much to do with the hazy and ill-defined character of photomicrographs generally, even of the best ones, as compared with really good photographic work on other lines.

The essential departure from the older method of illumination is practically a very simple affair, but to judge from the practical results, a most important one. Without reference, however, to the several geometrical figures and algebraical

formulæ of the original paper, we cannot hope to succeed in explaining the theory, but a parallel case on a large scale appeals at once to the eye as a practical demonstration.

The optical lantern now so well known in class-rooms and scientific gatherings, having passed out of its magic juvenility, is a case bearing exactly on the present question.

Here there is, to quote the original paper, "in one focus of an objective a uniformly illuminated disc, an image in reality of the condenser as in my method, and on the same plane the image of the object, projected, if properly done, without any flare spots, such as trouble the photomicroscopist to get rid of; in the conjugate focus is found the slide . . . . enveloped in a smaller but equally well distributed disc of light, and by no means in an image of the luminant, as done by the photomicroscopist. Were the lanternist or photographic enlarger, who is a sort of photomicrographer in his way, to do this, the result would soon show that something had gone wrong. In strictness, perhaps, the photomicrographer does *not* focus an image of the flame on his slide, although directed by microscopical authors and optical catalogues (*vide* Zeiss' last), to do so, but finding the result unsatisfactory, he racks in or out his condenser until his fine flame-image having become an enlarged flare spot, with no definition, has at some favourable part been found suitable to give an appearance of comparative uniformity to the luminous field, which in focus it could not do."

At least two lenses, or systems of lenses, are needed for the new method; the one to produce an image of the luminant in the posterior focal plane of the other, and both so placed that, instead of an image of the flame being formed on the slide, there is there projected an image of the first lens.

This, which like the lens is round, is a bright luminous area of perfect uniformity all over, and no temporary or permanent difference of luminosity in different parts of the flame (which is always more or less the case) can change the disc of light otherwise than uniformly so over its entire area. This is an important advantage, and, indeed, for this alone, it is advocated by Dr. A. Köhler, in a paper quoted in the April number of the R. M. S. Journal for 1894.

In that paper there is no notice taken, and, of course, no explanation of its greater excellencies already alluded to, viz., its freedom from what the optical theorist would call "astigmatic penumbræ" and "interference bands."

As the Scottish Microscopical Society published no journal five years ago, this new method has not become generally

known, and Dr. Köhler may claim an independent introduction of its use.

The latter gentleman, like the author we quote, who seems to have been its inventor, expresses himself as astonished that any other method should ever have been used, so excellent are the results attainable.

Up to the highest powers usually employed in such work ($\frac{1}{16}$ in. oil immersion lenses) the results are most satisfactory even when the objectives in use are ordinary ones, showing how much depends on the lighting alone, as every photographer knows; with low powers—*i.e.*, 1 in. and 1½ in. objectives—the results are equally superb, and show the nearest approach we have seen to the character of an excellent landscape photograph, in all the character of which the usual style of photomicrograph is so markedly deficient. Besides the expense incurred we believe, is next to nothing; there is no expensive achromatic condenser required, and an ordinary halfpenny candle seems to give quite sufficient light even when $\frac{1}{16}$ in. lenses are in use, with powers considerably over 1000 diameters.

The author uses an ordinary biconvex single lens next the light, but interposes a peculiar condenser of his own device between the flame image and the slide. This condenser, which we are unable to discuss here, consists, we understand, in its simplest form, of a common small coffee flask, with the neck removed, and a lens attached in its place, the curves being so adjusted that when filled with water, the system is perfectly aplanatic and permits still further of giving practically the advantage of an achromatic condenser, by tinting the water monochromatically. It is evident the same arrangement serves as a heat filter, and may also be made to serve as a colour screen when isochromatic plates are used.

We may conclude by drawing attention again to what practically at least seems the chief characteristic of this new method, viz., the projection upon the slide of a disc of light like a miniature lantern disc, and *not an image of the luminant* as in the older methods. Those wishing to follow out the theory of the method must consult the original paper in the current number of the *Journal of the Scottish Microscopical Society*. Should Dr. Köhler's adaptation be consulted in the *R. M. S. Journal* for April, 1894, it will be necessary, especially if construction be in view, to note that his figure has the rather serious error of showing the lenses with *twice* the radius of curvature proper to their distances.

RUPTURED STOMACH.

BY J. SPENCER SMITH, M.R.C.V.S., ASSISTANT TO H. THOMPSON, ESQ., M.R.C.V.S., ASPATRIA.

THINKING that the following case will be of interest to your readers, I venture to record it:—

On the evening of July 9th a message came requesting our immediate attendance at Bullgill Pit, the property of Messrs. The Crosby and Gilcrux Colliery Company, a mare being said to be ill with colic. On my arrival I found the subject to be an aged mare that had been working in the waggons all day. On enquiry I was informed that, after having its usual evening feed, it showed signs of colic, and an ordinary colic draught was given, but still the mare grew rapidly worse. It stood stretched out in the stall as if wanting to urinate, pawed incessantly with each fore-foot, particularly the near one, breathed heavily, while the vapour of perspiration rose from the body like steam, and the abdomen was frightfully distended with gas, but that in the course of an hour it seemed to get relief. On examination I found the pulse to be quick but feeble, respirations accelerated and mostly thoracic. Visible mucous membranes injected, abdomen slightly tympanitic, coldness of the legs and ears, and marks of patchy perspiration over the body.

A draught of spt. ammon. aromat., 1 oz.; tinct. zingiber, 1 oz.; chlorodyne, 1 oz.; and water, 1 pint, was administered, and the legs and body well wisped with straw and clothed.

I then left the mare for three-quarters of an hour, and on my return it seemed brighter; the pulse was firmer, warmth was restored to the body, and the breathing was normal.

Leaving instructions as to management, and a draught in case of the recurrence of pain, I returned home, and heard nothing more of the mare till July 15, when we were asked to examine it. Mr. Thompson found it to have all the symptoms of partial choking, as it frequently arched its neck with regurgitation up the gullet, accompanied by a sound as if affected with hiccough. The mare was off its feed, but on some green-growing corn being offered, it ate and swallowed easily.

Confident that he had something else than choking to deal with, Mr. Thompson ordered the mare to be sent to Aspatria, where a closer watch could be kept upon it.

It was admitted on July 16, afternoon, and though carefully watched, at intervals, until July 20, this peculiar symptom was only observed on July 17, after which date the appetite

gradually improved. It was discharged on July 20, being put to work in a few days; again nothing more was heard of it until about 10 p.m. on the night of August 3, when we were once more summoned to the pit, but on my arrival the mare was dead, having died about half-an-hour after it was first noticed to be ill. Knowing the previous history, and from the symptoms exhibited before death, I was sure that Ruptured Stomach had been the cause of death. This was verified on the morning of August 5, when a *post-mortem* examination was made, which revealed a rupture of the stomach about 18 inches long. More, there was a considerable quantity of fluid, of a gluey, gelatinous nature, seen adhering to the mucous and muscular coats of the ruptured edges, showing that the burst was not of recent occurrence, and that repair had been attempted. All the coats, but the serous, had evidently given way on the night of July 9, the fatal tear occurring on the night of death, August 3.

PURPURA HÆMORRHAGICA.

BY "VETERAN."

THE following history of a case of this disease presents features of interest that I have thought worthy of record in the JOURNAL. The subject was a heavy draught brown gelding, six years old, one of a large stud of horses, the property of a contractor.

It had been doing regular daily work until the day previous to the date on which my professional advice was requested, then being withdrawn from work merely on account of an abrasion of the skin on the near side of the neck, from a collar gall, to which fomentations only had been applied. The following morning, August 17th ult., the horsekeeper, on proceeding to give the morning feed, observed that during the night the horse had become unwell and swollen up in appearance. He at once, but with difficulty, removed him to a loose box. At 10 a.m., I found there were large œdematous swellings on the posterior aspect of both thighs; also one on the near side of the body. The head was pendulous, but not tumefied, and the visible mucous membranes showed no petechiæ. The pulse was dicrotonous, numbering 96 beats per minute; the temperature, much to my surprise, registering only 95° on a Fahrenheit thermometer. This was proved by repeated tests with other thermometers. Respiration was quickened, but not to any marked degree. The bowels were

constipated, the small quantity of fæces passed having a highly fœtid odour. The patient had no appetite for food, but drank water readily. I learned that for some weeks the patient seemed to have a slight cold, without cough, which did not affect its feeding or impair its capacity for work, and was, therefore, unheeded. Further inquiries and inspection made it clear to me that the stable management, in regard to ventilation and cleanliness, was very bad. Peat-moss, renewed at intervals of several weeks, was used as bedding, and the stable ventilation being badly regulated and imperfect, although, singularly enough, there was no sickness among the other fifty horses of the stud. Treatment was at once directed towards improving the sanitary surroundings, careful nursing, and the administration of soda hyposulph. in the drinking water. At 4 p.m. on the same date I found the patient's temperature had risen to 107°, the pulse firmer, but otherwise unaltered, the swellings increased, and one additional on the near shoulder and fore-arm, while faint petechiæ were visible on the Schneiderian membrane. Continued same treatment.

August 18th, 10 a.m.—Slight improvement, hyperpyrexia subsided, the temperature 105°. The pulse was unaltered, and the foul fæcal odour was greatly lessened. Potass. chlor. (a remedy that in many similar cases in my practice has been highly successful) was now prescribed in the usual doses, and continued until the morning of August 23rd, when, finding that there was no improvement, the tumefactions having extended along the floor of the abdomen, and involving all four limbs, the respiration more hurried, the pulse and temperature still rapid and high, in fact, that the purpuric symptoms generally were in no way abating. I resolved to try the iodine treatment, by intra-tracheal injections. I may mention also the immobility of the patient was so great that it had made no change in its position, from the time of the onset of the disease, doubtless due to serous infiltration into the intermuscular connective tissues, in addition to the subcutaneous effusions. Internal complications were feared, and altogether the case was of a serious character; fortunately the head and trachea had kept free from swelling, no difficulty being experienced in making an opening for the introduction of the hypodermic syringe, containing about 4 grains of iodine, the solution used being:—Iodine, 1 part; iodide of potassium, 2 parts; distilled water, 100 parts. Once daily, for a period of six days, was the trachea punctured and the iodine introduced, the beneficial results being little short of marvellous. The

exudative process seemed to be at once arrested, and the absorption of the large subcutaneous swellings was rapidly induced. A slow but uninterrupted recovery followed, good nursing and tonic treatment completing the cure. On September 10th, the date of my last visit, the patient was feeding fairly well, able for walking exercise, and although much emaciated the pulse and temperature were normal, the former, however, indicating a certain amount of debility. That the cause of illness was the entrance of a morbific principle, septic or toxic, into the blood, does not admit of any doubt in my mind. Purpura hæmorrhagica in this instance was the primary form, not being the sequel of any debilitating disease. The suddenness and severity of the attack, combined with the defective sanitary conditions, point to the probability that the impaired integrity of the blood of the patient was due to a poison of septic origin.

The channel of conveyance may have been the raw surface on the near side of the neck of the patient, the swellings at first appearing only on that side; but the mystery that still enshrouds the exact nature of the organism, all modern pathologists agree to be the causal agent of this disease of many synonyms, reduces our conclusions on this point to mere conjectures.

I consider peat-moss, as litter, to be a prolific source of disease, but only so in stables, in which its use is not carefully attended to. As a deodorizer and absorbent it is excellent, but therein lurks its hidden dangers. The urinary and fæcal fluids are retained for a great length of time, giving little or no evidence of their existence, all the time undergoing changes, chemical and organic, dangerous to animal life. I have traced many cases of sickness in horses, to the sodden state of the peat-moss litter; as a nidus for the deadly micro-organism, that is a fact beyond dispute.

I recommend my brother practitioners, who have not tried the iodine treatment per trachea in these cases, to do so. The germicidal and antiseptic properties of iodine act at once in the blood current of the subject operated on, while the same medicine when given *per ore*, is rendered unreliable by its tendency to form insoluble compounds. I am convinced that in the intra-tracheal injection of iodine in the above form, carefully performed, and with due regard to antiseptic precautions, we hold a potent remedy, not only for this, but also it may be for other allied diseases.

AN OUTBREAK OF EPIZOOTIC ABORTION IN CATTLE.*

BY VETERINARY-SURGEON DESMOND, WARRNAMBOOL, VICTORIA, AUSTRALIA.

As much attention is being drawn to the subject of epizootic abortion, the following results of investigation may be of interest to those studying the subject, and of service to country practitioners:

An outbreak occurred in this district on a large dairy farm, where upward of eighty dairy-cows were being milked, the milk supplying a cheese and butter factory. The farmer came to me with the doleful cry, "I am in dreadful trouble. I have lost £100 on my farm during the past few months." He went on to explain that forty cows had slipped their calves; and on further questioning I ascertained that the animals had aborted in all stages of gestation, from a few months to near full term, or, to repeat his own words, "They were from as big as my boot to full size."

I at once came to the conclusion that I would have to treat an outbreak of epizootic abortion, and a subsequent inspection of the cattle and farmyard confirmed me in this beyond a doubt.

I first proceeded to examine my client's stock and the surroundings of the farm. It was about an hour after the morning's milking when I arrived, and the cows which had just been milked were to be seen in an adjacent paddock, where green rye-grass was supplied to them morning and evening, this being distributed over the ground in small heaps. The cattle were of the class generally to be seen on dairy-farms in the district, and were of various ages and of all sizes. The cows that had aborted were easily picked out of the herd, as they showed want of condition, and their hair was rough and lustreless. While walking through the paddock in which the cattle were then grazing, my attention was attracted to several places where the earth had evidently been recently thrown up, and the farmer confirmed my suspicions by saying that it had been the custom to bury the aborted fœtuses where they were expelled. I advised him to destroy them by burning.

The dry cattle were next inspected, and the cows especially were found to be in splendid condition. But on entering a paddock in which the young cattle (all heifers) were grazing,

* Read at the June meeting of the Missouri Valley Veterinary Medical Association, by Dr. R. H. Harrison, D.V.S.

I was surprised to see a very poor bull. On closer examination I found him to be in wretched condition, and the brute had scarcely sufficient strength to move about. His hair was very rough, while the tuft of hair at the prepuce was matted and had a dark appearance, which made me suspicious that he had been the means of assisting to spread the disease. The owner informed me that he had paid £3 for this bull, and had had him for two years. I instructed him to destroy the animal at once. "That is the only one I have," protested my client, and in reply to my question whether he thought it right to have only one bull to one hundred cows, he said he considered it quite enough, though he had often seen six or seven cows in season around the bull while it was lying down. I informed him that thirty cows to one bull were considered by competent authorities to be a sufficient number.

An inspection of the milking-yard disclosed that it was in a deplorable state. It was more than two feet deep with liquid manure, and the corners, which were slightly lower than other portions of the yard, were covered with a green scum. The reason assigned for allowing the filth to accumulate in this manner was that the manure was required, and it was only when the yard became too boggy that all the stuff was removed, and a layer of ferns spread over it. The yard was in a very bad situation, and the arrangements were on a primitive plan. It was three chains from the dwelling-house, and was only three-quarters of a chain square, being altogether too small for the number of cattle (eighty) milked there twice a day. The yard sloped toward the bales, which were built under an old shed on one side, and so arranged that each cow after being milked, had to go through a small gate at the head of the bale, into a race which led into the paddock. This was a very bad arrangement for a dairy-yard, as it must frequently happen that one cow would block the race near the outlet, and so prevent the others from passing. The race, like the other surroundings, was in a frightful state, being one mass of liquid manure. The drainage (save the mark!) was also very defective, and adjacent to the yard, on the low side, there was a small pool of stagnant water, which had evidently percolated through the soil from the yard.

I informed my client that it was absolutely necessary for him to remove the yard to a better position. He at first demurred on account of the expense, but consented to effect the improvement when I told him I desired to be paid by results. I suggested that he should request his landlord to

pay a portion of the cost of removing the yard, but he seemed to think that there was very little prospect of such an appeal being successful. This landlord was a sheep-breeder, and if he could not get a tenant for the farm for dairying, he could stock it with sheep. (If he did so, he would probably soon learn to his cost that an outbreak of this kind is as serious in sheep-raising as it is in dairy-farming.) I selected a more suitable site on which the new yard was to be erected, and was fortunate in finding at a short distance a stony formation, which would afford natural drainage. In accordance with my suggestion, the shed to contain the bales was built of new timber, as the old timber could not well be disinfected. The floor of the shed was boarded with strong planks with tar joints, and this sloped into a plank drain, also having tar joints, which carried the excreta and disinfecting solution clear of the yard. The gates by which the cattle were let out after being milked, were made so as to open directly into the paddock.

I shall now proceed to describe the treatment I determined to put into force: an antiseptic method of treating the outbreak on a plan which I believe is original. For this purpose, a high stage was erected in the yard at the rear of the bales, and on this stage two casks, each of thirty gallons capacity, were mounted sufficiently high to allow the solution to gravitate with the force required to irrigate the genital organs of the cows—one cask containing a solution for this purpose, while the other was to sluice out the bales and drain. A long pipe, with suitable connections, was attached to the cask, and by this means the genital organs of the cows were irrigated with a medicated solution. After the milking, the same pipe was connected with the other cask, which contained a disinfecting solution, and by this means the shed and bales were disinfected. The following were the ingredients in the solution used for irrigating the genital organs of the cows:

Hydr. perch.	1¼ ounces.
Sodii chlorid.	3 pounds.
Rain-water	30 gallons.

To disinfect the shed and bales, I decided to use the following solutions alternately, and placed in cask No. 2:

Hydr. perch.	5 ounces.
Rain-water	30 gallons.

and

Ferri. sulph. comm.	3 pounds.
Rain-water	30 gallons.

I gave the following directions to my client: To watch all cows in calf, and immediately there were signs of parturition or abortion, to have them removed at once to a small paddock. If abortion took place, the fœtus and placenta were to be destroyed by fire. If the placenta did not come away naturally in ten to twelve hours, to remove it by mechanical means, and then irrigate the genital organs with about two gallons of solution from the No. 1 cask. This treatment to be adopted also with cows that had calved, so as to be on the safe side, and was to be done after all the other cows were milked and turned into pasture. I would have had separate bales and yards for newly-calved cows, and also for all new cases of abortion, but I adopted the above plan for the sake of economy.

After the new yards were built and the treatment had been followed for about five days I again visited the farm, and arrived before the morning milking had commenced. An inspection revealed a very altered state of affairs, which tended to show that the farmer had realised the importance of adopting the measures recommended for stamping out the disease. The bales and yard and surroundings were perfectly clean, and there was not the slightest odour from them. I inquired how the treatment had affected the cows, and the reply was, "The amount of matter that came away from the cows was surprising; it was yellow, and in some cases lumps like honeycomb also came away." "What length of time has elapsed since abortion took place in the cows from which there was so much discharge?" was my next question, and to this my client replied, "At all periods, from a few weeks to many months, but the cows the most discharge came from were those that I could get two feet of pipe into the genital organs."

While on this visit I found all the cows in *oestrum*, which I was informed came on about the third day the solution was used. The farmer also mentioned that in the first and second days he could only pass a foot of the pipe into the genital organs, but on the third day he could pass two feet, and was surprised to see such a mass of mucus come away. The fact that all the cows were coming in season was rather an advantage, as the os uteri would be dilated and the uterus could be irrigated.

I have continued the treatment described above, and, so far, the results are highly satisfactory.

One method of spreading the disease came under my notice on the occasion of my last visit. There was a bull

near the milking-yard, which, the farmer informed me, belonged to his neighbour, and it had jumped a three-railed fence to get among his cows. I advised him to inform his neighbour of the danger of the disease being carried to his cattle by the agency of the bull, and I believe the animal was at once removed.

In the course of conversation with some professional friends, I was asked, "What would you do if the owner of such a filthy farm as you have described refused to make the improvements?" My reply was that the farmer in this case kept the premises in that state from a mistaken idea of economy rather than from wilful neglect; but in the event of an owner refusing to comply with my instructions I would report the matter to the board of health, and if this did not bring about the desired result then I would inform his landlord and also the persons to whom he supplied the produce. In adopting such measures I would not be exceeding my duties as a veterinarian. If a fatal disease were to break out in that man's family, and the board of health found the premises to be in such an unsanitary condition, then I would be censured, and deservedly so, if it were found that I had previously examined the place and not furnished a report to the authorities.

The outbreak occurred in 1890, so I have had ample time to note the effects of my treatment. It is hardly needful to say that I have waited anxiously for the results, and that I have much pleasure in reporting that they were most gratifying to the owner of the dairy-farm and to myself. I have kept continuously in touch with the owner, and requested him to call on me when anything of note occurred in the course of the treatment. To sum up, the treatment had the desired effect. I think I can say this truthfully from a review of the circumstances. If the irrigation had not been resorted to, how would all the discharge that came away after the irrigation was used have been got rid of? Only four cows aborted at next calving, and the owner informs me that he could not irrigate these four satisfactorily, as he could not get all the pipe into the genital organ.

Since the outbreak was stamped out, Dr. Ross has procured a complete bacteriological laboratory, and has accepted me as his collaborator, and if I had to treat such an outbreak again I would make a bacteriological investigation with a view to isolating the micro-organism concerned in the production of the disease.

REPORT OF THE ARMY VETERINARY DEPARTMENT.

THE Annual Report on the equine strength of the army for the year ending March 31st, prepared by Veterinary-Colonel Lambert, has been received. During the year the health of the horses in Britain and Ireland was very satisfactory. The greatest mortality was in the Horse Artillery, and the lowest in the Household Cavalry. As to number of horses there is a small increase, the census on March last showing 13,192 troop horses, 1,915 chargers, and 178 mules, on the Home establishment. An examination of the returns under the head "Admissions to Treatment," attests the superior stamina of the mule for military purposes, as while 67·35 per cent. of the average strength of the horses received veterinary treatment, only 26·77 per cent. of the mules were professionally treated. The Infantry Transport sent the smallest percentage of cases, and the Army Service Corps the largest. The surgical cases numbered 3,698, not including limb affections, which latter number 2,245. Diseases of the chest and air passages numbered 835, a little over last year, but markedly smaller than in 1891 or 1892. Influenza and epizootic fever show a fair decrease; strangles a slight increase. Not a case of glanders or farcy has been reported since 1888. Nine years is the average age of horses now serving, the greater number of the horses being 6, 7, and 8 years old. The oldest horses, averaging 12 years 11 months, belong to the Infantry Transport, the youngest, averaging 8½ years to the Light and Household Cavalry; 13 years and 7 months is the average ages of the mules. Altogether the Report is very satisfactory, and testifies to the great efficiency of the Army Veterinary Department.

Editorial.

ON AFFILIATION.

IN an Editorial which I had occasion to write some months ago, in self-defence against the tactics employed by my rivals, I referred incidentally to a matter of great importance, a matter on which I have reflected long and carefully, and which, the longer I think of it, commends itself the more to my judgment, as I trust it will to the judgment of the readers of the JOURNAL.

In these modern days, when men are beginning to feel, as they never felt before, the importance of combination, when

joint stock companies are the order of the day in the mercantile world, when large railway companies are constantly forming closer and closer alliances with their neighbours and absorbing smaller lines, when even nations find it necessary to adopt exclusive legislation, it surely becomes learned and scientific bodies to consider the question of union. The Scottish Universities, seeing the folly and danger of competition—which would lead eventually to the degradation of underbidding—have adopted a protective policy in the way of common examinations for students entering their classes, and this is a step in the right direction. Now, I cannot see why the veterinary profession should not bestir itself and aim at amalgamation with other teaching bodies. This is a matter which concerns not merely men, like myself, who have devoted the best years of their lives to the training of the young practitioner, but to the whole veterinary world, as it ultimately touches on the vexed and difficult point of our social status. This point must be kept steadily in view all through the discussion which, I think, is certain to arise as soon as veterinary men and medical bodies awake to the importance of this grave and serious question. It is probable, indeed certain, that jealousies will be aroused and suspicions awakened, and everything done to obscure the true question, but if we keep the rocks and whirlpools carefully in view, we shall be better able to steer a correct and a safe course.

I have used the word Amalgamation, but perhaps it would be better and more politic to say Affiliation. What I should like to see, what I should consider the crowning glory of my life, would be the recognition of the veterinary colleges as branches of the medical profession by the Universities of the country. The very word Affiliation calls up a host of pleasant thoughts, which may guide us on our future course. We veterinary teachers have a high opinion of our aims and purposes, and of the work that we have accomplished and are accomplishing, but we should be quite glad to look reverently up to the great Universities of the country as our *almæ matres* and to treat them with the respect due to our seniors, in fact with true filial regard, although we have received practically no maternal care in our upbringing—provided that the Universities do their duty to us as their true-born daughters. I would carry out the metaphor a little further and urge on our kindly mothers that, as young maidens can do without much maternal solicitude during the years of childhood, but demand the most anxious care when they blossom into womanhood, so we veterinary schools, having survived all

our childish perils and sicknesses, and having grown hardy and strong on our plain fare, desire to place ourselves under the sheltering care of the Universities; we hope to do credit to our protectresses and to make their houses more attractive: what is more, we hope to be the means of bringing in a largely increased revenue to the maternal purse.

To talk in plain language, it seems to me only natural and fitting that veterinary science should form a part of a university curriculum. "The lower animals," said a wise man, "are our poor relations." This is a startling statement of a great truth, often overlooked, and it has an important bearing on the question I am discussing. What could be more fitting for a student of human anatomy or physiology than that, after listening to a series of brilliant lectures by Sir William Turner or Professor Rutherford, he should complete his studies and round off his knowledge of these vast tracts of medical science by studying the anatomy of the horse or the physiology of the ox? The one is the complement of the other; neither is complete without the other. Philologists tell us that a knowledge of Latin is an important help to the study of the modern Romance languages, and that conversely the modern languages, having retained in some cases peculiar formations—survivals of past ages—frequently explain difficulties in the parent tongue, in which these formations had become stunted and almost obliterated. The rule that holds good in the literary world holds good also in the scientific, and with even more force. I am convinced that a much wider horizon would be given to university life if a veterinary department were added to the medical. Doubts, justifiable in the narrower range of medical science based on the study of the human subject, would be cleared up by reference to the constitution of one or other of the "poor relations"; experiments in surgery or therapeutics might be tried on these latter before being transferred to the hospitals and the human patient, and much knowledge might be gained without moral or material risk to the operator. To the veterinary student the advantages accruing from contact with the *haute noblesse* of the medical world would be enormous. He would cease to be provincial, and become cosmopolitan. His degree, conferred on him by a university, and bearing at the same time the imprimatur of the Royal College of Veterinary Surgeons would be a more coveted distinction, and allow him to take rank amongst the medical practitioners of the country. Lastly, such an affiliation would effect a vast economy of forces. The same

classes might serve for veterinary and medical students alike, during the earlier part of their career at least, and the same laboratories and museums might supply the wants of both, especially if the veterinary treasures of our colleges were added to those of the universities. Examinations also—those bugbears of student life—might be simplified or reduced in number.

I trust that the suggestions which I am humbly putting forth may find favour with our university authorities, and with our own veterinary authorities at the same time. I trust some day to see a generous rivalry spring up amongst the universities, each striving to be the first to lend a friendly hand to our veterinary colleges, and all acknowledging the brave stand we have made, and the important part we have played in the great drama of life.

ON PROFESSIONAL ETIQUETTE.

In the course of conversation the other day, I asked a thoughtful friend what he considered to be the chief plagues of modern life. "The chief plagues of modern life," he said, "in my estimation, are waste-paper and advertising, especially the latter; formerly we could escape the advertiser if we wished, and tell the bookbinder to throw his proclamations into the waste-basket when binding our yearly volumes, but nowadays that is impossible: advertisements get so mixed up with the text that we can hardly tell which is the one and which is the other; they are paraded before our eyes everywhere and at all times, and at last they cause absolute nausea and disgust." My friend expressed himself perhaps with too much force, but at the same time I am bound to admit that advertising, when it creeps into professional life, as it threatens to do and indeed has begun to do, assumes a particularly repellent form. The case is different in commercial life, although even there advertising may become, so to speak, morbid; the public wishes to know certain facts, where it can obtain certain articles, how it can most readily be conveyed to certain places, when it can hear a favourite actor or preacher, and these demands are legitimately supplied by the advertisement columns of a newspaper. In the world of business also it is, commonly, merely the strongest that is wanted, and the strongest proclaims itself by its loud voice or—which is the same thing—by its long purse. "The survival of the fittest" may mean, and very often does mean

in mercantile life the survival of the strongest—the coarsest, if you like—but is it so in the professions? Is the leather-lung preacher the man whom we would consult in our hour of sorrow, or who goes deepest into our heart? Is the pompous, loud-talking, boastful physician the trusted and confidential friend of the family? I think not. I think that those qualities which are the essence of the best type of clergyman, doctor or lawyer, hinder such men from parading their virtues before their fellows. Such men may not always survive in this rude world, but then that is so much the worse for the world. We find, undoubtedly, the fittest and the highest type of professional man in the patient, humble investigator and searcher after truth, be it scientific or ethical truth, but these men are often, perhaps generally, self-forgetful, impatient of trickery, averse to worldly schemes of ambition and to all kinds of intrigue, and too often do they allow themselves to be utilised by cunning and selfish men for selfish purposes. Now, everything ought to be done to exclude the vulgar element in professional life, and to foster that which is tender and sensitive, provided always that it be at the same time healthy and pure. We may even take, in our own way, an example from our commercial brethren, and aim at the survival of the fittest, but we must remember that our fittest and their fittest are not always, or necessarily, the same. It may be the most robust with them; it may be the most delicate with us. In commercial life, loud shouting may be the best plan to follow; in professional life, there must be decorous silence, that the still, small voice may be allowed to make itself heard, because that voice is the voice of truth, and it is truth that we worship. Self-proclamation may do in business; self-repression must be the rule with us. The result will be the same, the method will be different.

As some of my readers may not have seen the very excellent papers on this subject, read at the recent meeting of the British Medical Association, I subjoin extracts which seem to me very well written and very appropriate.

Advertising.

Dr. G. W. POTTER read a paper on advertising. Having defined professional advertising as the public or private praising of a man in his professional capacity by himself or his agents for fame or gain, he observed that it is a vice from which the most highly placed members of the profession are by no means free, and that it is unreasonable to expect the man who takes 2s. fees to be ethically precise while the 2-guinea consultant advertises boldly and unashamed. No method of advertising is worked more energetically than the compilation of books. Can it be seriously maintained that the large number of medical works issued from the press are *bonâ fide* intended for the informa-

tion and instruction of medical men? Some time ago a practitioner persuaded one of his patients to purchase a book which he had written. The price was a guinea, the book was highly technical, and no injustice is done to the author by assuming that his object was to advertise himself and his merits to the patient and the patient's friends. Another device was the leaving of cards at private residences, and a third was in connection with newspaper paragraphs relative to the illness of prominent individuals. Some of these announcements were unobjectionable from the friend's point of view, but in too many instances the qualifications and the residence of the medical attendant were given with a fulness which left no doubt as to the ulterior motive. Another class of advertisers are the men who give certificates to vendors of foods and other commercial articles. These certificates are duly published in newspapers with many cunning additions. One gentleman in his widely advertised testimonial to the excellence of a certain food inserted the statement that it had been used by many of his influential patients, of whom he had attended seven hundred without losing one. Another form of medical advertising which is very common and on the increase is the writing of books with catchy titles, which make a great show (of course with the anthor's name), in the publishers' list given in the lay press. Needy practitioners in poor neighbourhoods seek to draw attention to themselves by methods of which the better class of tradesmen would be ashamed. There is a special demerit in professional advertising which must be plainly recognised both in order that no injustice may be done to our profession and in order that the public may be enlightened on the subject. The state of the case so far as it concerns the public is that the professional advertiser can by no means guarantee the results of treatment which are at least suggested in his advertisements. A commercial advertiser undertakes to deliver a certain article, and does so, whereas a medical man can only guarantee services—results he cannot guarantee. From the professional point of view, the advertiser takes an unfair advantage of his professional brother who does not advertise.

Intra-Professional Etiquette.

Mr. T. Garrett Horder (Cardiff) then introduced for debate the subject of Intra-professional Etiquette. After expressing his great satisfaction at the formation of a section of Ethics he pointed out that the loyal and faithful observance of the rules of intra-professional etiquette had an importance which could be scarcely overrated. It was absolutely necessary that medical men should show mutual consideration and sympathy, else they could hardly expect to escape unfair treatment on the part of the public. Moreover, if patients were made acquainted with the general rules which govern our professional life, they would be more likely to avoid courses which tend to place medical men in unpleasant positions. The subject might be conveniently classified under three headings: (1) The etiquette of private practice; (2) that of club appointments; and (3) that of consultation. In the first place, there is no question as to the right of patients to change their medical attendants. In cases of incurable disease there is a natural anxiety on the part of sufferers to try every means which promises relief; they go from one practitioner to another, and it is from such patients that quacks extract large sums, for these gentlemen are troubled by no doubts or misgivings—their remedies are infallible and their charges are liberal. Before accepting a patient who has already been under the charge of a brother practitioner, we should make sure that the previous attendant has been informed of the intended change, and it is a good plan ourselves to communicate with him directly. When consulted by patients who are also members of a club, we should do nothing to embitter the relations between a club medical officer and his patients. Club practice is difficult to carry on, and becomes much more

so when it is known that other medical men are willing to accept the office. With respect to the etiquette of consultations, it must be remembered that the relations between the public and specialists have undergone a great change. Formerly the consultant communicated the result of his examination to the family practitioner, but patients now consult specialists without making their intention known to their ordinary attendant. As a general rule, however, the consultant should enter into communication with the family practitioner. For meeting the cases in which the consultant has contrived altogether to supplant the previous attendant it is most desirable that a court of appeal should be instituted by which ethical questions might be examined and decided.

Mr. LEE (Cork) said that some time ago the medical officers of all the medical clubs in Cork resigned their appointments in consequence of abuses whereby wealthy persons were permitted to become members of clubs and obtain medical attendance for seven-and-sixpence a year. The appointments are now held by four imported medical men, whom the profession in Cork do not meet in consultation, and some anxiety is felt by the latter as to their proper course in the event of their attendance being requested on account of dangerous illness (such as post-partum hæmorrhages) among the patients of the club practitioners.

Dr. PEARSE said that the same question had arisen at Portsmouth, where there is an enormous medical club connected with the Dockyard. He thought that no such consultations should be held.

Mr. H. HEMMING urged that in any course that might be adopted due care should be taken that the lives of patients were not endangered.

Drs. HARRIS, WOODS, and MCNEE also took part in the discussion.

In the columns of this issue of the JOURNAL will be found the proceedings of the Eastern Counties Veterinary Medical Association at their meeting, held on August 22nd ult. Much to my surprise, which will doubtless be shared in by most of the members of the profession, those present at the meeting decided that the Royal College of Veterinary Surgeons should be asked to investigate the subject of tuberculosis in cattle. This, in the face of the exhaustive work done by the members of the Royal Commission regarding that disease, combined with the intimate knowledge of it, in all its aspects, we have derived from the admirable and searching investigations on the Continent and in America, seems to be, to say the least, an unnecessary move. I am of opinion, without committing myself to an entire approval of the suggestions in the circular, on which the discussion was based, that the Government should bestow immediate attention to the suppression of tuberculosis in cattle.

All the Veterinary Colleges commence their Winter Session this week, and it is well to note that all have decided to revert to the old system, to have a Winter and a Summer Session.

I regret extremely that it is impossible for me to insert the plates in connection with the valuable paper by Professor Macqueen.

Had I known that the National Veterinary Association were determined not to allow any but their own members to gain knowledge from their brother practitioners, I certainly should not have inserted any portion of any of the papers read at their last meeting, but I only became fully aware of the fact when it was too late, and the matter was in print. It seems to me a most narrow-minded policy, and one which I feel sure will not add to the popularity and *éclat* of that body.

Proceedings of Veterinary Medical Societies, etc.

BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

A GENERAL meeting was held at the Bush Hotel, Carlisle, on Friday, 19th July. Mr. J. C. Soulsby, president, occupied the chair, and there were also present: Professor Bradley, of the New Veterinary College, Edinburgh, Messrs. H. Thompson, Aspatria; Donald, Wigton; Pears and Park, Penrith; and J. W. Hewson, hon. sec.

Some discussion took place as to the issue of a circular by the Secretary for a special meeting of the Society to take steps to forward the candidature of Mr. McIntosh, of Dumfries, for election to the Council.

Mr. DONALD complained that no time was specified on the circular, and when he attended at the usual hour he could not find that there was any meeting.

The SECRETARY said as a matter of fact no meeting was held. The meeting was arranged at the request of several members. He afterwards heard that Mr. McIntosh did not wish to become a candidate.

Mr. DONALD: He staunchly refused.

Mr. BELL (Carlisle) wrote that the ecraseur belonging to the Society required repairing, and the tooth instrument case was broken in transit from Carlisle to Mr. Soulsby, of Whitehaven. There was a rule that damage to instruments should be repaired at the expense of the person borrowing them.

The PRESIDENT said the tooth instrument case was broken before it went to his father.

Mr. DONALD said Mr. Soulsby, of Whitehaven, was not a member of the Society, and was not entitled to use the instruments.

As a result of discussion, it was agreed that the instruments be procured for the next meeting, and if the broken case was not strong enough for its purpose, as was alleged, the Society should provide a better one.

The SECRETARY nominated for membership of the Society Mr. Hewitson, Brampton, and Mr. Martin, Appleby.

Pathogenic Bacteria—Discussion.

Discussion was now resumed on the interesting demonstration of Pathogenic Bacteria given by Professor Bradley at last meeting.

Mr. THOMPSON said he did not altogether go in with the germ theory, but he supposed he would have to, to a certain extent. Some people said he did not read his Bible, but he said he did. In the 13th chapter of St. Matthew, and part of the third verse and five following verses, there was something

said about a sower going forth to sow, and some of the seed fell by the wayside and the birds picked it up; some fell amongst thorns and was choked, some fell among stones and was scorched by the sun, and some fell upon good ground and brought forth some a hundred and some sixty fold. He asked them not to run away with the idea that he had selected a text and was going to preach a sermon, but he thought this very applicable as showing that seed required a good bed in the ground before it would bring forth its increase. There were four points in that text. In three different places where the seed fell the ground proved unsuitable, but on the good ground it grew; and that he thought was applicable to the case of the microbe and the bacillus—it must have suitable ground. He did not doubt the accuracy of the experts who with the aid of the microscope had found out the different bacilli or microbes or germs which caused different specific diseases. Their experiments were carried out on suitable ground and surroundings. Experts told them that the spores of specific bacilli or microbes could lie in a dry condition for a considerable time, like "wheat or some other grain" and retain their vitality, waiting until they found a suitable situation for their development. If these spores were continually in our midst, in the water we drink, the air we breathe, and the food we take, and if they were so infectious, it was remarkable that the whole human family and all the beasts of the earth were not destroyed by these little microbes. It appeared to be due to the simple reason that in three-fourths of the cases they did not find suitable ground. With reference to the vitality of these spores, there had been a very good illustration in Cumberland this year. Many farmers had sown their turnips where the ground was in good tilth, but there was no germination because moisture was wanted. Instead of the seed springing in the course of six or eight days, it had not germinated in six or eight weeks, and the seed was wasted. The first slide Professor Bradley showed them was the microbes of pus found in an external wound. That was possibly quite correct, but what about the pus that had not an external opening, such as an encysted abscess in the external parts of the body? It would be another sort of microbe, he supposed. With reference to tetanus, said to be caused by the drumstick bacilli, he had read in Sims Woodhead's bacteriology that this bacillus was found in soil, and particularly in garden mould. That was rather astonishing, because it was a common practice with him to dust with dry soil a good healthy wound—it was a very good absorbent, and the wound rapidly healed. He could not remember having a case of tetanus supervening on the application of dust to a wound that was healing up nicely. It was also recorded in cases of tetanus that the bacilli were not found in the secretions or in the blood, but in the wound or the neighbourhood of it. He remembered a case of tetanus in which the victim was a big black horse belonging to the late Mr. Blackstock, of Hayton Castle. In pulling a heavy load it stepped on a nail, which went through the sole and split the coffin bone. This was about 5.30 or six o'clock at night, and the horse died of acute lockjaw before midnight, in the greatest agony. It was a smart bacillus that caused that tetanus. With reference to tuberculosis, glanders, actinomycosis, and other specific diseases, he thought there were sufficient diagnostic symptoms without calling in the aid of the microscope, but in anthrax there was much difference of opinion. The anthrax bacillus was among the first that was found, but he was a bit sceptical as to whether the rod was the cause of the disease or an affect of the disease. Experts told them that the anthrax bacillus was a great lover of oxygen. In the case of a beast at the point of death from anthrax the bacilli were not to be discovered if the blood was examined. What then was the disease prior to the invasion of the bacilli? If the bacilli loved oxygen, then in the case of an animal breathing 70 or 80 times a minutes with its lungs in a congested state, the blood could

not be properly oxydised, then where was the bacillus to get the oxygen from? They were told that spores would not develop in the body. They must be outside the body, and they also loved oxygen, and what was more they must have a temperature of not less than 64° and up to 108° and 110°. In winter time he would like to know when there was a temperature of 64, with frost and snow on the ground? In summer time sunlight was said to have a depressing effect on them and assisted in destroying them. He did not see why they should be so infectious or contagious. He did believe in anthrax blood being very inoculative, from what he had seen himself, but he could not believe it was so infectious or contagious as people made believe, as he knew of many solitary cases having occurred. In these cases he would like to know why one professional man should take it upon himself to say it was anthrax when there was so much difference of opinion amongst experts. Professor McFadyean said in his Journal that many cases sent up to him were not anthrax at all. Sunlight destroyed them, yet it took 64 degrees of heat to germinate the spores, and he (Mr. Thompson) could not see how it arose. If they were in a dry form and floating about certainly peculiarities of the soil, food, or water, or temperature might act on the beast, and bring it into that condition where the spores must develop and grow; but that was the only way that he could see. It came to the old text again that the ground must be suitable; and they must inquire what it was that put the body into that condition which gave these specific organisms power to assert themselves. The late Professor Dick used to say "Find out the cause—remove the cause and the effects will cease." That was a grand old story. If these spores of typhoid fever, scarlet fever, measles, small pox, tuberculosis, glanders, anthrax, etc., were all floating about continually in our midst, it was funny that these organisms should select various constitutions to develop their different species. If these bacilli were the cause of disease, why did not the experts find some material to destroy them, and not let them take effect? He thought they were not the cause, they were more the effect of some altered conditions of the body.

Mr. PEARS was of opinion that there was a great deal to be discovered yet. One thing he was "capped" with, namely, when the blood of an animal was sent for examination an hour or two after death from anthrax, experts were unable to say the cause of death, and said the specimens had been sent too late. It was very unsatisfactory, because in cases which he knew to be anthrax the Professors had been unable to tell him anything about it.

The PRESIDENT said that when Professor Bradley informed him that tetanus was due to a microbe generally found in soils he could hardly understand it, because a number of wounds were kept dirty and they would often find that horses out at grass had wounds on them, and they must be expected to suffer from tetanus if that was the case. He had come to the conclusion that tetanus was due to the surrounding atmosphere, and the stable perhaps had something to do with it. They might go two or three years without having a case, and then there might be half-a-dozen within a month. To his mind the climate had something to do with it. Perhaps it was that the animal got into a certain habit of body and the microbes were able to lodge there and develop. Anthrax was a very vexed question, for one man would say a certain case was anthrax, and another would say it was not. How were they to get to the bottom of it? With all their microscopes and testing and such like, experts were not able to say with certainty that a disease was due to a certain germ. Science had not advanced so far.

Mr. DONALD said tetanus, anthrax and tubercle seemed to interest them as practitioners the most. Like Mr. Thompson, he was doubtful about tetanus being due to the particular bacillus which scientists told us it was due to. It was common from wounds especially, but he had never seen more tetanus in

the case of animals and consequently liable to contamination by soil in the fields than in the case of those treated antiseptically under the veterinary surgeon. It was a practical fact known to every practitioner that punctured wounds and wounds resulting from ligature were decidedly the most liable to be followed by tetanus, and viewed in the light of present day pathology he failed to see why it should be so. Another point on which information was wanted —when he was at College it was taught that granulating wounds were proof against the infection of micro-organism or septic infection, but as every practitioner knew tetanus supervened when the healing process was far advanced and progressing satisfactorily. How was this? It is just contrary to what one might expect. In the treatment of tetanus, after the bacilli was developed in a wound and about the tissues, it ought to be a simple matter to treat that wound, either with agents that will destroy the bacilli or neutralise their secretion, whichever might produce the symptoms. Take the case of docking. One would naturally expect that an animal suffering from tetanus as a result of docking, if it were redocked and the wound dressed, it would go a long way towards the recovery of the animal. Even supposing that a portion of the poison had been absorbed into the system, if the source of supply was cut off, the vital forces ought to be sufficient to rid the system of the poison in it if it was developed in the wound locally, but as a matter of fact we are no more successful in treating tetanus now than 50 years ago. Scientific men were widely at variance on the question of anthrax. One man would say that a sample of blood was teeming with anthrax bacilli, and another scientist would say there was no evidence of anthrax bacilli—that the bacilli present were the bacilli of decomposition. In the Silloth cases, a number of scientific men swore that the bacilli were anthrax, and others that they were not. He could point to other opinions upon different cases in which microscopists were quite as much at variance as the practical men, indeed he thought if you want two men to disagree upon the same facts get two bacteriologists. Bacteriology seemed to him to be too largely made up of theories. Mr. Thompson instanced an isolated case of anthrax. In the Wigton district this spring, four cattle pastured in a field part of last summer and all winter, and one was struck with anthrax. It presented all the *post-mortem* appearances of anthrax. There had not been another case amongst them, and there was no reasonable possibility of any contagion or contamination. About two years ago he had what he considered a case anthrax in a certain stock in the neighbourhood of Wigton. The animal presented all the *post-mortem* appearances of anthrax, and he forwarded a portion of the spleen to Edinburgh, but they could find no anthrax baccilli. The case was not reported, and he concluded that it was not anthrax, notwithstanding that there were *post-mortem* symptoms of anthrax. But they lost another three cases in three months, and these were not reported at all. They were buried on the farm, contrary to the general rule, not in quicklime, but in the ordinary soil, and he allowed them to lie until decomposition had set in before they were buried. He believed a great deal of mischief was done by disinfecting the carcases and manure of anthrax animals. The best disinfectant they had for anthrax was decomposition. What interested the practitioner most was the amount of curative knowledge which could be gathered from bacteriology or any science. As far as he could see, notwithstanding all the work and time and energy bestowed upon bacteriology, it had not assisted curative medicine to any marked degree, and he did not think it had done very much in the line of preventive medicine. It might be presumptuous for general practitioners to express opinions, but he thought bacteriologists had a great deal to tell them before they arrived at the truth. Could Professor Bradley tell them any other disease which gave them these typical *post-mortem* symptoms of anthrax which was not pure anthrax. Both before the

passing of the Anthrax Act and since they had frequently come across isolated cases showing all the typical symptoms of anthrax. But they heard no more about it, and if they sent the blood or specimens for examination they were told it was not anthrax, and in some cases in which they never suspected anthrax, they got word back that it was anthrax.

Mr. THOMPSON referred to the Silloth cases which were certified to be anthrax, but in which no fewer than four professional men distinctly said they could find no trace of anthrax. From one of the cases portions of the body were sent to the Royal Veterinary College, London, and the New Veterinary College, and the Clyde Street College, Edinboro', and at none of them could they find anthrax bacilli. Yet from the same body Mr. John Bell and Mr. Hall, of this city, and Professor McCall, Glasgow, said they had found the anthrax bacilli. It was rather strange that they found them and yet none of the men who assisted in the *post-mortems*, with cuts on their hands, felt any bad effect. What was more, from the self-same body a rabbit was inoculated and took no harm; the poultry picked up the blood and pieces of flesh and so did the dogs, and they took no harm. From what he had seen and read of it, and from what he had heard from Mr. Wright and Mr. Little, it was not anthrax at all; it was a poisonous material which the horses had got in their food.

Mr. DONALD mentioned the use of tuberculin, observing that everyone at the last meeting spoke in praise of it. Some cases which he had tested he had condemned as tuberculous; and he had had the opportunity of testing two by *post-mortem* examination. A well-bred heifer which was thought to be tuberculous he subjected to the test, injecting tuberculin according to the instructions. The temperature rose to 106. A *post-mortem* examination showed a number of abscesses and chronic pneumonia. He forwarded portions of the lungs to Professor McFadyean asking if it was tubercle or not, and he replied that it was chronic catarrhal pneumonia. The next was the case of a cow which some months before was put up to fatten under his advice that she was tuberculous. After injection her temperature remained at 102. She was killed some six or eight weeks after, and her lungs were most distinctly tuberculous. Not satisfied with his own opinion, he forwarded the greater portion to Professor McFadyean, who replied that there was no doubt the animal was tuberculous. These were facts they could not shut their eyes to, and he believed from what he had seen of tuberculin that it was not so good a diagnostic agent as some scientists made out. In all experiments he had made with tuberculin he had never seen the animals suffer constitutionally at all, it had never done them any harm.

Professor BRADLEY, in reply, said Mr. Thompson's test was remarkably good in a way. Not only was good ground the proper pabulum necessary for the larger seeds such as oats, but it was absolutely necessary for microscopic seeds usually known as spores. Mr. Thompson touched upon natural immunity and wanted to know how it was that these spores floated about in such numbers and ultimately gaining access to the animal body, produced disease. We, as animals, were inhaling these spores, etc., by the thousand per day, and yet we continued healthy. The theory of phagocytosis had been put forward to explain this natural immunity, and it seemed at the time to be a very satisfactory explanation. It was supposed that these phagocytes, which were modified or specialised leucocytes, had the power of surrounding and devouring these germs. Some bacilli were said to have a positive chemotactic influence over phagocytes; they secreted a subtle something which was a sort of bait to the phagocytes. Others had a negative chemotactic influence, secreting something which had a contrary effect and drove away the phagocyte, and in these cases disease appeared, whereas it did not result in the former case. That was only one theory. There were a number of others,

but it would be useless to go over them. With reference to suppuration, Mr. Thompson seemed in doubt as to the causal agent of pus in an enclosed abscess. The best example of pus in an enclosed abscess was a case of strangles. In a strangles abscess it was possible to find streptococci, resembling the streptococci in ordinary pus. In these cases of enclosed abscess the strepto or staphylococcus must have been carried by the blood. How they entered the blood was of little moment. Germs could easily gain access to the blood. He saw it stated that it was almost impossible to get blood from a living animal or living person without getting some germs. The most healthy of us, probably, had circulating in our bodies numbers of different germs. Those who were against the germal theory would say, "Why did they reside there and cause no inconvenience?" It was just possible they really only existed there and did not live for any lengthened period, and in a lot of cases were, perhaps, just corpses floating about. Tetanus was an interesting and difficult subject to tackle. It was only recently that a satisfactory explanation could be given of the cause of tetanus, and to some people it did not seem satisfactory even yet. One great fact which pointed to the existence of the germ in soil was seen in military campaigns. Before the discovery by Nicolaier of this particular bacillus, tetanus was, after a battle, a common disease in the army. It was pointed out how the danger could be obviated by placing the wounded men in beds as soon as possible, in order that the wounds might not get polluted by the soil. Since then the percentage of deaths from tetanus had considerably decreased. Mr. Thompson's statement about dusting wounds with soil was to him a startling one, and he would have taken it as counter to all the laws of antiseptic surgery, but Mr. Thompson was careful enough to add that the wound must be a good one, *i.e.*, in a healthy condition. It was quite possible that if the soil was applied to a wound in a bad condition, tetanus would result. With regard to the use of the microscope, he said in the majority of cases of tuberculosis, the ordinary diagnostic tests by the ear, eye, &c., were sufficient to make one sure that it was a case of tuberculosis. But if there was a mild case of tuberculosis of the udder, then a microscope certainly had its use, that is to say, it was possible to demonstrate bacillus in the milk. It was by means of the microscope that we learnt the life history of the causal agents of disease, and it was only by knowing their life history that one could satisfactorily combat the ravages of disease. On the subject of anthrax, he had an inward quaking. Mr. Thompson propounded a conundrum, whether the disease was produced by the bacillus, or whether the bacillus was produced by disease. There were four postulates laid down by Koch, and unless they were all admitted, one was never at liberty to say that a particular germ caused a particular disease. First, the germ must be found in the animal, in the blood, or in the secretions; secondly, there must be cultivation of those germs, in some artificial medium outside the animal body to several generations, then with the pure cultivation, the disease must be produced again in a healthy animal, and, finally, in the blood or tissue juices of the animal inoculated, the bacillus must again be demonstrated. Would it not be rather strange to find that this could be done if the bacillus was the effect of the disease? Did not all this rather point conclusively that the bacillus was the cause of the disease and not produced by the disease? If the bacillus was produced by the disease, how was it they could take it out, cultivate it, inoculate it into another animal, and get precisely the same disease? He pointed out that it was not absolutely necessary for their growth that the germs of anthrax should have oxygen, as it was shown that the germ could grow out of oxygen altogether. To produce spores free oxygen is demanded. It was only when the blood was shed that the spores could be produced. The spores were capable of withstanding extremes of temperature—freezing, for instance, though frost

would very soon destroy the bacillus. Sunlight had the power of preventing growth, but the spore remained very hardy, even being able to resist boiling for a few seconds. An important point was this. It was almost out of the question to find a bacillus in blood that had been obtained from an animal some considerable time previously. It was almost impossible to find bacilli in the spleen a few hours after death, the reason being that the bacillus of anthrax could not live where putrefaction was taking place. If specimens were sent to any laboratory for microscopic examination, it should be portions of the extremity—the foot or one of the ears, for instance, because at these points putrefaction was last to reach. The President referred to the case of horses at grass rarely being affected with tetanus. That might be accounted for by the sanitary surroundings. Mr. Donald asked one or two questions. A punctured wound was one of the most difficult wounds to treat, and it always set up the greatest amount of irritative fever, and was one of the most slow of healing. A ligature, unless it was absolutely antiseptic, was liable to set up irritation. These were the only two reasons which he could give to account for tetanus in such cases. Granulated wounds were almost proof against infection, but though the phagocytes, which were present, might be sufficient to prevent the entrance of any germ, we must remember that the tetanus bacillus only lived on the surface of the wound, and the phagocytes might have practically no effect upon them. Mr. Donald made a sweeping assertion when he said bacteriology had done little for curative medicine. Bacteriology was first applied to human medicine, to which we must look for the greatest advances. He could endorse, to some extent, the statement that tuberculin was not such a good diagnostic agent as was at one time supposed. It was not so good as mallein, which was probably at the summit as one of the new diagnostic agents. Tuberculin was remarkably useful, but there were cases on record where it had not been successful. He was still open to hear the same charge brought against mallein.

Mr. THOMPSON said a number of cases of tetanus he had come across had been from wounds in the feet. But he had attended pit bottoms for 35 years, and though he had seen any number of cases of probed wounds in the feet, he had never seen a case of tetanus except on one occasion.

The PRESIDENT said he could endorse Mr. Thompson's remarks with regard to the pit ponies. For the past twelve years he had never come across a case of tetanus amongst them.

Professor BRADLEY said pits were tolerably free from bacteria, as a rule.

On the motion of Mr. DONALD, and seconded by Mr. PEARS, a hearty vote of thanks was passed to Professor Bradley.

Mr. DONALD proposed that Mr. Park's paper on "A Case of Schirrous Cord in a Colt," be taken as read and printed. This was seconded by Mr. THOMPSON, and carried.

Mr. SOULSBY, the president, then offered to read a paper at the next meeting on the diseases of the digestive system of the ox.

A vote of thanks was proposed to the Chairman, which was seconded by Mr. HEWSON and carried.

YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

THE summer quarterly meeting of the Association was held on Friday, August 2nd, at the Royal Hotel, Scarborough. The President (Mr. Jas. Cooke, F.R.C.V.S.), took the chair, and the others present were: Professor Pritchard, London; Messrs. J. Clarkson, Garforth; J. W. Lazenby, Boston Spa; Frank Somers, W. F. Greenhalgh, Geo. E. Bowman, and A. W. Mason, Leeds; J. E. Scriven, Tadcaster; C. Lang, Bridlington; Gavin Scott, and

Geo. W. Pickering, Scarborough; M. Robinson, Barnsley; J. M. Axe, Doncaster; Henry Snarry, and Geo. Hardie, York.

The PRESIDENT said that before commencing the business he must express his pleasure at meeting them in Scarborough. He appreciated the honour of their company all the more, seeing that it was not customary to hold these meetings outside of Leeds. He hoped they would be able to combine business with pleasure, and he was sure those who were not acquainted with Scarborough would, if they prolonged their stay, be amply repaid by the natural beauties of the town and district.

The HON. SECRETARY announced that letters of apology for absence had been received from Mr. Chambers, Huddersfield; Professor Williams, Edinburgh; Mr. Pollard, Wakefield; Professor Penberthy, and Professor McFadyean, London.

The minutes of the last meeting were taken as read, and were confirmed.

Elections and Nomination.

The following new members were elected: Mr. H. G. Bowes, Leeds; Mr. C. Lang, Bridlington; Mr. Green, M.R.C.V.S., Sherburn-in-Elvet; and Mr. Brand, Leeds, was nominated as a member of the Association.

Annual Report.

The HON. TREASURER (Mr. J. E. Scriven) read his report, in which it was stated that expenses had been much as usual, except that they had had to buy more stationery, which would last them two or three years. There was a balance of £4 10s. 4d. in hand. Speaking of the number of defaulters amongst the subscribers the Hon. Treasurer said some of them had been defaulters for four or five years, and, though they had been written to with regard to their subscriptions, they did not reply. They amounted to about £25.

After some discussion the names were read out and again notified.

Mr. MASON moved and Mr. Snarry seconded that the Treasurer's report be adopted, and the resolution was put and carried.

The HON. SECRETARY reported that a letter was received on June 13th from the British Institute of Preventive Medicine, stating that they would be glad to receive any subscriptions at their earliest possible convenience. This matter had come before the Association on a previous occasion, but they could not give anything if they wished unless they had a balance of £20 in hand.

Mr. MASON moved that the Secretary be instructed to write to the Institute and inform them that they were unable to give anything.

Mr. SNARRY seconded, and the motion was carried.

There was also a letter from Mr. E. Falkner, thanking the Association for their letter of condolence with relatives of the late Mr. Thos. Greaves, Manchester.

The HON. SECRETARY moved a formal resolution to the effect that the Association's account with Messrs. Brown be transferred to the Bradford Old Bank. The change was proposed merely in order to meet the convenience of the Treasurer.

An objection was raised to the passing of the motion on the ground that three months' notice had not been given, according to the bye-law. The matter therefore dropped.

The Inspection of Meat.

The Rev. FREDERICK LAWRENCE, of Westow Vicarage, York, entered the room at this point, and asked permission to speak for a few moments on a subject concerning the veterinary profession. His request having been

granted, Mr. Lawrence said he was the hon. sec. of the Church Sanitary Association, which very recently organised a deputation to the Board of Agriculture and the Local Government Board, asking that no animal should be slaughtered until examined by a veterinary surgeon; that all meat, before sold, should be examined by a properly qualified veterinary surgeon, and that there should be established a scheme by which certain members of the profession should hold for two or three years scholarships for the purpose of learning meat inspection abroad. The Duke of Westminster headed their deputation, and 7,300 persons signed the memorial. Hearing that the meeting was being held, he thought that if they would be good enough to hear him for a few minutes, they would know that the Church was doing what she could to show her respect for the splendid profession to which they belonged. They wished to see such a change brought about that the veterinary profession might hold the position it did in some places abroad. There was a considerable amount of meat sold all over the country which never ought to be sold. If, however, the animal was killed in a properly appointed abattoir, after thorough inspection by gentlemen who had gone into the question, then, if no meat was sold until properly examined—to the exclusion of those who did it now, but were utterly unfit—the whole community would be immeasurably benefitted, and the welfare of the country would be greatly advanced. He would urge the Association to send a memorial, somewhat similar to the one he had mentioned, to the Local Government Board. His association was approaching the New Government, and their college might also do that. They might also propose a resolution condemning, in their judgment, the present mode of the examination of meat, and send that resolution to the Government. He had the assurance of the officials that all action brought to bear upon them would strengthen their hands.

The PRESIDENT said the subject was one which had engaged the attention of their profession for a considerable time, and they looked upon it as a grievance that veterinary surgeons were not appointed always as meat inspectors and inspectors of slaughter houses, dairies, and other places. He understood the Rev. Gentleman to say that they ought to go abroad to study sanitary science.

Mr. LAWRENCE said he referred to the examination of meat, because it had never been a speciality in England.

The PRESIDENT: But it is a special subject in our examination.

Mr. LAWRENCE: Certainly, but it has never assumed the position in England. It was thought, if the Government was asked to grant scholarships, gentlemen would have the advantage of studying the question in Berlin, and other places. You have never had the opportunity of studying it that you ought to have had.

The CHAIRMAN: I don't see the necessity for going abroad.

Mr. LAWRENCE said it was part of the memorial, and one to which great importance was attached. They felt that the question of meat inspection had not advanced to the height of importance to which it had risen abroad.

Professor PRITCHARD thought that the Duke of Westminster and the other heads of the movement ought to be satisfied themselves as to whether the veterinary surgeons had or had not taken the proper means of acquainting themselves with the question of the inspection of meat. It was a very serious matter, coming from them, to say a veterinary surgeon was not acquainted with the inspection of meat.

Mr. LAWRENCE thought that, if he retired now, some good would have been done, because he would convey to his association what had been said. They were trying to bring about an improvement in the meat supply, and they would not rest until veterinary surgeons had the position to which they were entitled.

Mr. SNARRY moved a vote of thanks to Mr. Lawrence. The thanks of the association were due to him for the manner in which he was going about his work.

The HON. SECRETARY seconded the resolution, pointing out that the subject had not been discussed, and, if it was to be discussed, it must be placed on the agenda paper for a subsequent meeting.

Mr. LAWRENCE then thanked the meeting for listening to him, and withdrew.

Specimens—Resumed Discussion.

Mr. W. F. GREENHALGH re-opened the discussion on the lumbar vertebræ of a fourteen years' old cart-horse, the specimen having, since the previous meeting, been sawn into sections. He went on to remind the members that, at the age of fourteen, this horse exhibited signs of lameness or paralysis. It was not necessary for him to detail the symptoms, because they had already been recorded. Since then, however, he had, by permission of the Yorkshire College, had the bone sawn up, and he believed it was still a difficult question to determine what was the cause of the paralysis. He would like the opinion of the meeting upon it. The Professor at the Yorkshire College thought it was osteo-sarcoma, but he could not see how that could be the case. The animal evinced no symptoms of paralysis until three days before his death, and, when he was perfectly paralysed eventually, he had him killed. The result was before them.

The PRESIDENT said this was a specimen which was brought before them at the last meeting by Mr. Greenhalgh, and they expressed a wish to have it boiled down and investigated more minutely. He himself had not made a thorough examination of it, but he believed it was the opinion of some of the members on the last occasion, that there was a fracture of some of the vertebræ. There was evidently much enlargement, and most probably fracture.

The HON. SECRETARY reminded the members that he gave it as his opinion at the last meeting that it was fracture of the vertebræ, and Nature's attempt to heal it.

Professor PRITCHARD said that as far as he was able to judge from the *post-mortem* appearances, he did not think it was a case of fracture. He thought that, as the result of a fracture, such an amount of extravasation of blood would have taken place that, instead of a long-standing case of disease, they would have found a broken back in its entirety. He looked upon it as one of those cases of diseased spine which were not uncommonly met with in old animals, and the disease had gone on to such an extent as ultimately to interfere with the spinal cord, with the result that paralysis supervened.

The PRESIDENT pointed out that according to the description in Professor Williams' work on fractures, together with the opinion of many veterinary surgeons, fracture might take place with the displacement of the bones, and paralysis ultimately set in.

Mr. GAVIN SCOTT said there was a case in Scarboro' two years ago where it was said that they had fracture of the lumbar vertebræ, after which the horse came back to the stable and went out to hunt next day. It carried a lady over some fences, was put in the stable again, and, after three or four days hunting, it was considered that the animal had fractured the lumbar vertebræ on the previous day. He never could understand how that could be. These were the facts of the case, and the man who had charge of the horse and allowed it to go out hunting had to pay damages for it. If there was a fracture in the specimen before them it was not complete.

The PRESIDENT thought there was a difficulty in determining what was the cause of the present case without further boiling down.

Mr. GREENHALGH said he would like the members to express an opinion. Was it due to injury ?

Mr. MASON thought it was one of those common cases known as "jinked" back.

The PRESIDENT: It might be a fracture of the bone without separation.

Mr. GREENHALGH: I should like to have a definite opinion.

Mr. SCRIVEN thought an injury had been caused by something falling on the horse's back, and it had been going on for years. So much pressure had been put on the spinal cord that paralysis had set in.

Mr. PICKERING said he believed the opinion of the meeting was that it was not due to fracture, but that at some previous time there had been an injury to the horse's back. It might have been a severe sprain. Whether it was a malignant growth or not they were not prepared to say without a microscopic examination.

The HON. SECRETARY: We shall be glad to see the specimen at the next meeting after being boiled.

Professor PRITCHARD, London, then read a paper on

SOME DISEASES OF THE HORSE'S HOCK.

The writer, who was received with applause, said that, in treating this subject, he had elected to speak more particularly with regard to some of the pathological conditions which affected the softer structures of the joint. He had a reason for leaving out bone spavin, but it was, perhaps, not necessary that he should mention it. Of those selected he proposed to give them a very brief description, with the opinions of those who had dealt with the matter, and introducing occasionally his own ideas with regard to them. The first one he would treat with was "bog spavin"—an enlargement at the antero inferior inclined to the inner part of the hock. It was an enlargement which, under ordinary circumstances, readily yielded to pressure, and an enlargement which, in some instances, was associated with another disease of the softer structures of the hock, viz., "Thoroughpin."

When he was at College, a minor importance was attached to the pathological condition of bog spavin, and, probably, mainly for the reason that it seldom gave rise to lameness. Circumstances altered with the times, and the period had now come when bog spavin, at any rate, in some classes of horses, was looked upon as rather a serious matter—so serious, indeed, that the judges in show rings, and the veterinary inspectors in connection with them, not infrequently discarded horses, particularly young ones, affected with bog spavin. He was now alluding to the cart horse. He need not tell them that bog spavin was nothing more nor less than a dropsical condition of the main joint of the hock. It was on the causes of the malady he wished more particularly to dwell. Years ago, it was looked upon as the result of sprain or concussion. In his opinion, anything which would give rise to such an increase of the quantity of fluid contained in the capsule of this large joint as to enlarge the size of it, putting it on the stretch, as it were, would create a bog spavin. For example, in a case where a horse, with very extravagant hind action, was frequently called upon to do his utmost with his hind limbs, particularly when young, would occasion it. Calling upon stallions to cover mares larger than themselves, or to cover mares when too young, or an unusual large number of mares; acts which would necessitate a more than ordinary amount of exertion of the hocks, and acts which would consequently produce a repeated stretching of the capsule of the joint, and, of necessity, an ultimate increased calibre of it. He was further of opinion that these *blown* hocks, as they were termed very frequently, were due to another cause, most frequently in operation in young cart horses intended mainly for show purposes, he meant the extreme amount of forcing, in the way of feeding, to which these animals are subjected, he had had many opportunities of judging of this, and the more he saw of it the more he became convinced of

existence of the fact. This probably was the cause in operation which had led many veterinarians to the conclusion that bog spavins were hereditary, and leading them consequently to rejecting animals at shows that were so affected. While agreeing that such animals should be prevented from becoming prize-winners, he doubted very much whether the veterinarian was justified in looking upon this condition of the hock, as being due, even in a majority of instances, to hereditary taint, and he would repeat that in his opinion this condition of the young cart-horse's hock was traceable to forcing and to forcing only. He wished his audience to understand that although he was willing to admit that in many instances bog spavin was due to concussion and sprain, in by far the larger number of cases it was to be traced in the other causes he had instanced.

He then passed on to speak of another enlarged condition of the hock commonly called "Thoroughpin." This he need not say was a swelling which appeared at the supero lateral part of the back of the joint. The swelling might appear on one side only—more frequently on both—but it was considered as much a thoroughpin if found on one side only or on both. The real pathological condition which they spoke of under this term was a dropsical condition of the bursa placed below the principal flexa of the hind limb and the calcis. When speaking of bog spavin he said it was sometimes associated with thoroughpin; and there were numbers of cases in which, by applying pressure to the bog spavin the enlargement in thoroughpin increased, and *vice versa*. This had led to the conclusion by some that under all circumstances there was a connection between the cavity of this bursa and the cavity of the true hock joint. He had carefully dissected these over and over again, and, in the majority of cases where he dissected a young hock he found a decided partition between the wall of the bursa and the wall of the joint of the capsule. Thin, he would admit, but there it was. They might ask how he accounted for the increase of the one enlargement by applying pressure to the other. He accounted for it in this way: that owing to the increased size of either the capsule joint, on the one side, or the bursa, on the other, absorption of that partition took place, and ever afterwards there was communication between the two. That was his reading of the matter, though it might, of course, be incorrect. The causes he need not dwell upon beyond saying that he considered the principal to be that of sprain from over-exertion; but he would make a few remarks as to the treatment of the disease. He did this because they were led sometimes by their clients to do really what they pretty well knew would be next to useless. He was a great believer in the firing-iron in cases of thoroughpin, and he believed he was aware of every mode of treatment adopted in these cases. Some, he knew, advocated very strongly the use of the truss, and he believed his friend and fellow-pupil, Mr. Santy, was a great advocate of the use of a particular kind of truss in such cases. For his own part—perhaps it was more his misfortune than anything else, but he had not yet seen a truss applied to a horse's hock, especially if such horse were of an irritable temperament, where sufficient pressure would be brought to bear without excoriation taking place as the result. The anti-phlogistic treatment might be adopted apparently successfully, but the relief was only temporary. In some instances blisters answered admirably, but, in his experience, in the majority of cases, instead of having a beneficial effect, they had absolutely doubled or trebled the enlargement. He had, however, never yet seen a case where the firing-iron had failed to reduce the enlargement. He was not now speaking of a case of long standing disease in which the walls of the sac had undergone transformation into strong fibrous or even bony material, but where the wall of the sac was still thin, and the contents fluid, if the animal had been properly prepared with physic and cooling applications and nicely fired

afterwards, no matter how large the thoroughpin might be, he had never seen a case where the firing iron had failed. Passing on to curb, Professor Pritchard said he was going to make a statement which would probably astonish everyone in the room. It was that he had worked very hard during the past eighteen months, and particularly so since he received the invitation to deliver that lecture, with the object of finding a specimen of true characteristic curb in a dead animal. And would they believe that he had utterly failed? They had as large knackers' yards in London as there were anywhere in the country, and, though he had two or three men well bribed to try and find a good specimen of curb, they had up to the present utterly failed. He had looked over hundreds of dead horses himself with the same result. There were curbs existing, because he had several under treatment now, but they were not so plentiful as some people would have them imagine. What was a curb? In plain language it was an enlargement at the back of the hock, about opposite to the heads of the splint bones, and it was an enlargement which was exactly in the centre of the back of the hock. He was speaking of a curb *per se* not of one where they had a large mass of disease at the back of the hock. What was this enlargement due to? They were told by some that it was a sprained condition of the calcaneo cuboid ligament. In refutation of this he advanced the following argument. It was so situated and so connected with these bones—the calcis, the cuboid, and the outer splint bone—and it was of such strength that he thought it almost impossible any exertion on the part of the animal could produce a sprained condition of it. In reply to this it could be very truly said that there was no structure in the body which might not become lacerated. He was willing to admit that; but when they took into consideration the fact that the hock was more tightly knitted together than any joint in the body they must certainly allow room in their minds to question whether the calcaneo cuboid ligament could become even partially sprained. Again putting on one side the matter of strength of the ligament, he would admit for a moment that this ligament might possibly be sprained and that it should be enlarged as the consequence of the sprain. How could it be got over that such enlargement was not in the centre of the back of the hock—the situation of curb could not be. The ligament was placed towards the outer side, and that was an argument he ventured to think was beyond contradiction. Another theory advanced was that it was a sprain of the ligament connecting the calcis and the cuboid together. The argument he had advanced would answer that. The late Professor Spooner used to teach that it was a sprain of the annular ligament at the back of the hock. Another opinion was that it was a sprain of the tendon superficially placed there. In reply to that he would say that they had never found this tendon thickened at this particular part even if it became sprained. It was always lower down. He had never seen a case where there had been the slightest thickening of the perforatus tendon at this part. To his mind Percival got nearest to the true pathology of curb. He said in his book that it was an inflamed condition of the tissue placed between the annular ligament and the tendons at the back of the hock, and that the thickened condition of this tissue around the tendons formed almost a diseased sheath. He would give them his own idea of it. He had told them there was an annular ligament at the back of the hock, and they knew that the perforatus tendon ran down the back of the hock. It was necessary for the true extension and flexion of the hock that this perforatus tendon should move in apposition with the annular ligament, and, to allow of its doing so without friction taking place, Nature had provided at this part a delicate portion of synovial membrane. An inflamed condition of this synovial membrane and its results would give rise to the enlargement 'exactly in the situation of that termed curb. He had repeatedly seen the deposition under the annular

ligament on *post-mortem* examination, and had he been fortunate enough to have secured a specimen recently, argument in proof of the theory would have been unnecessary. The Professor proceeded to explain that he considered the inflammation was set up in the affected tissue by some extravagant action on the part of the animal, causing more than an ordinary movement between the tendon and the annular ligament, giving rise to slight laceration of the synovial membrane there placed; and he might say as a passing remark that he was very much inclined to the opinion that many cases of so-called sprained tendons and ligaments in other parts of the limbs, were really cases of disease affecting synovial membranes in connection with such tendons and ligaments. In the examination of horses' hocks he would suggest that great care be taken that an undue development of the head of the outer splint bone be not mistaken for the enlargement of curb, and pointed out that in such cases the undue size would not be in the central line.

The Professor next alluded to an enlargement in the front of, and inclined to the outer portion of the hock, a dropsical condition of the sheath of the "Peroneus" tendon, considering it of common occurrence, and submitted the question as to whether lameness had, in the experience of any present, been known to arise from it? He had never been able to trace defective action to it.

The lecture was brought to a close by some remarks upon laceration of the ligaments in the front of the hock, which bound down, and held in their proper position, the tendons as they passed the front of the joint; the symptoms indicative of such lesions, together with the treatment advisable to adopt.

The Professor apologised for having passed rather hurriedly over some of the subject matter, but trusted he had said sufficient to create some interest in it, and to give rise to a discussion.

The PRESIDENT moved that the thanks of the meeting be given to Professor Pritchard for his address. The subject on which he had spoken was one which was of the greatest interest to them. If they found a horse lame, or in an examination as to soundness, they generally looked to the hock. When a student in London, he had the pleasure of listening to Professor Pritchard's pathology of curb, and he had always adhered to those ideas on curb ever since. He found people, especially dealers, had a greater horror of capped hocks even than spavins, and they considered it a great depreciation in an animal, and a difficult thing to get rid of too. With regard to bog spavin, he quite agreed with Professor Pritchard, and he thought all of them who had used a truss not properly made would do the same. Improper pressure, he thought, was calculated to do more harm than good. If properly applied, however, it relieved the bog spavin or thorough-pin, though only temporarily. He always condemned a horse under five years old with odd hocks, but what constituted unsoundness at four was probably soundness at six. There was also a difference of opinion as to whether spavins were hereditary, but he did not see that it was absolutely necessary for an animal to be born with a spavin in order to constitute hereditary spavin.

Mr. MASON said that in speaking of thorough-pin, Professor Pritchard mentioned absorption of the partition. He remembered that at college the professor gave him this very partition to find, and, though he thought he had found it, he was told that he was mistaken. As regarded curb, it was interesting to him at the present moment, as he had been asked to give an opinion on a horse but had not been allowed to manipulate. He should be glad to have the opinion of Professor Pritchard. Standing in one position, he could distinctly see there was a curb, but looking at the animal from another aspect his opinion wavered. Unfortunately he could not manipulate, and, on

being pressed for an opinion, he said he could not give one without being allowed to manipulate. He believed the animal had undoubtedly a curb, and he was of opinion the Professor had examined the same animal. Cases of sprained hock were, he thought, common where there was lameness in the hind limb. He would also like to ask Professor Pritchard whether he had even seen cases of bog spavin and thorough-pin in poor stock. As a boy he remembered the animals were not forced as at present, and he never remembered seeing any of the young stock with which he had to do suffering from thorough-pins or bog spavin.

Mr. BOWMAN, speaking of blown (?) hocks, said he came across a great deal of it in the East Riding, and he nearly always found that it came on in animals boxed up and overfed. When they got to a certain size he generally advised clients to turn them away and feed on plain food. Curb, he considered, was very often in the beginning sprain of the annular ligament. He saw the horse to which Mr. Mason had referred, and he always thought that animals curved on the outside of the hock were more liable to it than those with wide hocks. Not long ago he had a horse which had windgalls very badly on the outside of the hock, and when put to severe work it went lame from them directly.

Mr. SNARRY was of opinion that there was no fixed remedy for thorough-pins. A few years ago he was called to a hunter which had been blistered twice. He said he could do no good. The owner said he was no good as he was, and told him he could have a go at him. He injected a weak solution of tincture of iodine, and had some pads of tow soaked in cold water and bound on tight. This went on for a few weeks. The leg swelled right up, and when it all went down the thorough-pin was less than before. He had another go, injected iodine again, and paid more attention to the pressure. That animal got perfectly clear of his thorough-pin, was hunted another season, and sold for £140. Turning to bog spavin, he had found it was unusual in young animals, and especially in ill-conditioned ones, but they went away by themselves, or, at any rate, simple charging was all that was necessary. He would like to ask Professor Pritchard what this was that they found across the hock on manipulation. They were told it was a predisposition to curb.

Mr. AXE said he had had a great many cases of bog spavin through his hands, and he had always found that they occurred in young horses of a plethoric condition. After cooling them down and turning them out he had found that they came right. As the horses got older and stronger the spavins went away gradually, though perhaps they were six or eight months in doing it. He had also found blisters effectual, with the use of the pointed iron occasionally. Speaking of curbs, Mr. Axe said he had found a horse had sometimes been strong on the head of the small metatarsal bone on one hock, and had eventually fallen lame on that hock. He would ask Professor Pritchard whether that had anything to do with curb putting out from that part?

The HON. SECRETARY expressed the pleasure it had given him to hear Professor Pritchard's address, and his great additions to their pathology. In his neighbourhood they almost always resorted to physic, firing, and blisters, and they were the only remedies. He was glad to hear of Mr. Snarry's success.

Mr. GREENHALGH expressed his regret that bone spavin had not been touched upon. He would ask the lecturer if there was cruelty attached to the working of a horse with bone spavin?

Mr. PICKERING said he had taken great interest in hock lameness for years, and he had always been nervous as to whether a horse had spavin or not. He was hoping that Professor Pritchard would touch on spavins in horses

with respect to lameness. He had passed horses with hocks which would have condemned them in nine cases out of ten, and he believed people generally jumped to the conclusion that a horse was spavined if lame. He found that bog-spavin entirely disappeared in most cases after a dose of physic, rest, and repeated blistering. Was the lecturer in favour of pyro-puncture or bar-firing? As to curb, he did not think any man could give an opinion without manipulation.

Mr. ROBINSON dealt with the hereditary nature of bog-spavin, and said he had animals which had developed it through four generations.

Professor PRITCHARD, in reply, said that in speaking of the ligaments he was referring to a complete rupture of them, and he could easily understand where the front hock had been enlarged, lameness had arisen from the sprained condition of the ligament. From Mr. Bowman's description he gathered that he had seen a case of lameness from windgall on the outside. He must confess that he had never come across a case where lameness had resulted from a dropsical condition of the sheath of the peroneus. It was very unsightly, but if examining a score of horses, all suffering from it, he should certainly advise purchase and mention of it in the certificate. With regard to Mr. Snarry's operation of opening a thoroughpin, he considered him a bold man. He guarded himself, however, with the statement of his client that he might do just what he liked. There was an end of the responsibility. Mr. Snarry was not the only one who had advocated the opening of these enlargements. In fact, many years ago the French practised it repeatedly, and in England veterinary surgeons had opened them unwittingly. This had been done by the insertion of setons, and, where the animal had outlived the treatment, he had done so with considerable trouble, and with a thickening of the limbs. If they did open this sac, he advised them to have the permission of the owner. Even then he would have the animal shut up in a box, so that he would not be talked about afterwards. With respect to the manipulation of the back of the hock, if a horse had got a recent curb, and it was small, they would notice that after going so far the finger would slip on a little more quickly. This was due to the pressure of a fluid, and this was the curb. It should be perfectly smooth and even, and, whether the horse was lame or not, the presence of a small enlargement indicated curb. He agreed with Mr. Axe with reference to the head of the small outer metatarsal bone being enlarged and preceding a case of curb, but he read that in this way: There was already inflammation going on in the ligament attached to the end of the metatarsal bone, and there was extension of the inflammation to parts which subsequently gave rise to curb. Answering the question generally, he did not think that a horse with an undue development of the head of the outer small metatarsal bone was predisposed to curb. If they had a good-shaped hock, the extra development of the head of the bone would not have this result. He was pleased to hear from Mr. Sōmers that he had made an addition to the pathology of the profession. The profession was welcome to it. With reference to the question put, whether working with bone spavin was an act of cruelty, he was inclined to think there was something to read between the lines. If they worked an animal in pain it was cruelty. If an animal had bone spavin and was not lame from bone spavin, it was not cruelty. Mr. Pickering observed that it was difficult to detect spavin. There was no doubt about it. At the same time he was quite willing to admit that he should be very sorry to form an opinion as to whether one hock was diseased without having the opportunity of examining the other. There was one point which should influence them, and that was the way the animal used his hocks. The high-heeled shoe was a mode of treatment which should be adopted in all cases of lameness of the hock. As regarded firing, in cases of curb he should have recourse to the pyro-puncture, but in cases of thorough-pin he

should line-fire. As to whether bog spavin was hereditary, it was a very difficult question to answer, but he should hesitate very much before saying that it was. He was inclined to believe that at the present day they were forcing their animals to such an extent that they could almost produce any morbid condition in them. If they had a sire and a dam both affected by bog spavin, and they were careful in breeding and rearing them, he believed they would breed it out in the second generation. The way in which animals were now forced was something beyond all common sense.

The PRESIDENT moved that the thanks of the Association be given to their esteemed friend Professor Pritchard.

Mr. AXE seconded, and the resolution was heartily approved.

Professor PRITCHARD having responded, the proceedings closed by the President entertaining the members to tea.

FRANK SOMERS (Leeds), *Hon. Sec.*

EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of the Association was held on Thursday, August 22nd, at the Royal Assembly Rooms, Yarmouth. There was a good attendance of members, and Mr. James Simpson, President of the Royal College of Veterinary Surgeons, honoured the gathering with his presence. The members attending were: Messrs. W. Bower, East Rudham; E. W. Wright, Yoxford; C. Clarke, Reepham; J. Barr, Halvergate; T. E. Auger, Wymondham; H. Wilkinson, Martham; W. Shipley, sen., Yarmouth; J. E. Kitchen, London; J. Thurston, Fressingfield; W. Turtill, Wickham Market; R. C. Tayler, Colchester; J. Pollock, Norwich; S. Smith, Lowestoft; W. Shipley, jun., Yarmouth; G. Johnson, Henley; H. Gamble, Downham Market; H. Thurston, Fressingfield; J. D. Allman, London.

The proceedings were prefaced by an excellent luncheon, at which the President of the Association, Mr. F. Case, of Swaffham, occupied the chair. At the conclusion of this repast there were a few toasts. "The Queen" having been honoured,

Mr. BOWER proposed "The health of the President of the College," who, he said, was always striving to advance the interests of the profession. The toast was accorded vocal honours.

The PRESIDENT said the toast was one that interested them as much as him, but he was glad that this year he would be their mouthpiece on the many occasions on which that toast would be proposed for acceptance. As they were aware, the College went on for very many years in a humdrum fashion, but within the last few years changes had taken place, changes which certainly affected those parents who proposed to place their sons in the veterinary profession. The introduction of the four-years' course was hailed with delight, and it was thought that this would afford an opportunity of thinning their ranks, or, at any rate, keeping the profession more select as far as numbers were concerned. Since the introduction of the four-years' course, those gentlemen who hailed with delight the idea of extending the curriculum have married, or, being already married, have had sons, and they are now eligible for entrance to the Royal College of Veterinary Surgeons. Then came the question—Had they done wisely in extending the curriculum and increasing the output from their own pockets? That would be a selfish way of looking at it; but if they were to keep pace with the times, to retain, or, rather, obtain that position which they claimed, and to which they had a perfect right, then they would say that the Royal College had done wisely and well in extending the curriculum. The results had not been very disastrous to the veterinary students, while the effect upon themselves had not been to assist them; but he believed that in the near future they would have, as they had at present, a class

of students entering college who would be the means of raising their profession and obtaining for them that social position to which they had a right. If the students who were sent to the colleges and brought into the profession, were the sons of men capable of maintaining them in a proper position at college for four years; then when they emerged from their student careers, they would do for others what they had endeavoured to do for them. There were not many questions now of very great importance before the Council. There was that old question of their grievance against the Board of Agriculture, and this was a question which he hoped might be settled during his presidency. Whether it would be settled in their favour, or they be condemned to occupy their present position, remained to be seen. So far as he was concerned, he was making every endeavour to obtain for the profession that recognition to which they were entitled. He was in communication with the member for his district and other members of parliament, with the object of obtaining for the profession an interview with the President of the Board of Agriculture. If they could obtain this, and calmly and seriously lay before him the views of the profession, and the position in which it is placed in regard to the public, and also showed that the public is not being fairly treated considering the large amounts it has to contribute for the support of the Animals Department of the Board of Agriculture; then he believed they would be successful, especially if they showed that both they and the public had a grievance against the Board of Agriculture. If he was successful in bringing about the interview, it would be his duty, after consultation with the Council, to prepare such a tale as would appeal to the heart of the President of the Board of Agriculture. He had to thank the proposer for the kind way in which he had referred to him personally, and his hearers for the handsome way in which they had received the name of the College.

The health of Mr. President Case, proposed by Mr. W. SHIPLEY, sen., was also warmly greeted, and the President made fitting response.

A Member Elected to the Council.

The HON. SECRETARY made the gratifying announcement, amid applause, that their member and candidate for Council, Mr. Bower, had been elected.

The "National" to Visit Yarmouth.

The HON. SECRETARY then made the equally pleasing intimation that at their request he had invited the National Veterinary Association to visit the Eastern Counties, and Yarmouth had been selected for the 1896 annual meeting. Mr. W. Bower had been chosen as the President of the National for that year.

Nominations.

The HON. SECRETARY proposed, and Mr. W. SHIPLEY, senr., seconded for nomination as a new member Mr. Balls, of Yarmouth.

Mr. THURSTON nominated Mr. Roberts, of Diss, and Mr. BOWER seconded.

The HON. SECRETARY proposed Mr. Mullane, of Bungay; Mr. Thurston seconded.

The HON. SECRETARY also proposed Mr. F. B. C. TAYLOR, of Thuxton; Mr. S. SMITH seconded.

All four nominations were accepted, and the gentlemen will be proposed for election at the next meeting.

Next Meeting.

Mr. TURTILL proposed that the next meeting be held at Ipswich. The HON. SECRETARY seconded.

An amendment was moved in favour of visiting Colchester, but only the proposer and seconder voted for it, and Ipswich was therefore selected, the date being left to the Committee to arrange.

A Resignation.

The HON. SECRETARY stated that Mr. T. Slipper, who had now settled in Tamworth, wrote to him resigning his membership of the Association. He had been their Secretary about five years and this was the first time he had ever received a resignation.

Tuberculosis in Cattle.

The HON. SEC. then read a letter dated Edinburgh, July 25th, 1895, from the Scottish Metropolitan Veterinary Medical Society, addressed to the President and Council of the Royal College of Veterinary Surgeons, as follows:—

"The President and members of the above Society, which numbers on its roll many of the leading veterinarians in Scotland, are of opinion that the rapid and alarming spread during late years of bovine tuberculosis among the cattle generally, and the dairy stock, in particular, of Great Britain and Ireland, cannot but be regarded in the light of a great national danger, and that stringent measures to prevent the extension of this dangerous and insidious disease are urgently necessary, and should be at once entered upon.

"They therefore respectfully request the influence and aid of the President and Council of the Royal College of Veterinary Surgeons to bring these indisputable facts, and the opinions formed thereon, to the notice of the Minister of Agriculture.

"Further, that the Royal Commission formed to investigate this disease, in relation to its danger to human life, have some months ago submitted their conclusions to the Government, that tuberculosis was prevalent in cattle, including dairy stock, and was communicable to mankind, through the consumption as food of their milk and flesh, and that this Society regrets that so grave a state of matters should continue to exist unheeded by the Government.

"It is, moreover, their opinion—

1. That bovine tuberculosis should be scheduled in the Contagious Diseases Act of 1894.
2. That all dairy cows should be placed under veterinary supervision.
3. That among all suspected herds and dairy stock, the use of the diagnostic test, "tuberculin," under scientific supervision, should be made compulsory.

"The co-operation and support of sister societies in the veterinary profession have been earnestly requested, as the Scottish Metropolitan Veterinary Medical Society considers that a duty has devolved upon the whole profession to combine to strengthen the cry to the Government for the adoption of measures whereby bovine tuberculosis in this country may be checked, and ultimately extirpated.

"It would, in conclusion, further point out for the consideration of the Government, that the longer the delay, the greater the difficulties and the attendant expense that will inevitably follow."

The PRESIDENT of the Royal College said that he had received a similar communication which would be laid before the Council at their next meeting. Without expressing any opinion as to whether tuberculosis should be a scheduled disease or not he might ask them to be cautious before coming to any conclusion upon the question, because they would doubtless consider whether tuberculosis was a disease that could be readily communicable to human beings except where the mammary gland is affected with tuberculosis. They would have to consider whether it was advisible to urge upon the Government, the destruction of—he did not hesitate to say—hundreds of thousands of cattle, because in his opinion hundreds of thousands of cattle were affected with tuberculosis at the present moment, if the disease was not

destructive to the life of man. It was a serious thing when a profession like their's represented to the Government that tuberculosis was communicable to man not only through the milk but from the flesh of animals and urge upon them at great cost to the English taxpayer that they should include this disease of tuberculosis in the schedule of diseases and adopt the course suggested by the Scottish Society's circular, that the tuberculin test should be applied to all animals suspected. How were they to draw the line? Might it not be considered by every veterinary surgeon that an animal showing symptoms of ordinary wasting is subject to tuberculosis? In the event of the test being applied and it is found that the animal– not perhaps a milch cow at all but a store beast—is affected with tuberculosis, was it right to urge upon the Government the destruction of all these animals.

Mr. W. SHIPLEY, sen., said he did not think it would be right for the association to express an opinion as to the desirability of making tuberculosis a scheduled disease. Before they did that the question should be thoroughly gone into, and the Council was the proper body to do that. They all knew that it was a most dangerous disease, but at the same time, if they took the course suggested, it would necessitate the destruction of a vast amount of property which might not be advisable.

The HON. SECRETARY said that there was a considerable amount of tuberculosis in cattle at the present time, but as to whether it was a danger to human life, he would not like to say. It certainly was not to the extent they were led to believe, except in special cases. They did not want to be snubbed, nor to speak without their book, and therefore they should ask the Royal College to undertake some investigations and present the matter in a proper light to the profession before the Board of Agriculture was approached. He therefore moved that we, the members of the Eastern Counties V.M.A., suggest that the Royal College of Veterinary Surgeons should investigate the subject of tuberculosis in cattle and place a report before the members of the profession rather than before the Board of Agriculture.

Mr. SMITH seconded.

Mr. BARR thought that they should concur with the Scottish Association so far as dairy cattle were concerned, whose milk was used for food purposes. Milk was known to be much more infectious than the flesh, and much more notice should be taken of that than of the flesh from store cattle. He believed that hundreds of infants died every year in the towns from taking the milk of tuberculous cows, and so far as the circular related to dairy cows they should take notice of it. He knew of three or four cows in his parish which were infected, and whose milk he declined to receive into his house. In one instance he advised a man to get rid of an infected cow, but he refused, and the cow died six months afterwards from tuberculosis.

The resolution was then put and carried unanimously.

Rule Rescinded.

Mr. AUGER moved, the President seconded, and it was unanimously resolved, that the rule allowing payment of 5s. per head from the funds of the Association towards the cost of the annual dinner be rescinded. It was explained that this had been tried as an experiment to secure a greater attendance of members, but it had failed.

ABDOMINAL SURGERY.

Mr. W. SHIPLEY, sen. (the Hon. Treasurer), then introduced as a subject for discussion the question of abdominal surgery. In the course of his address he said :—

He was not present at Birmingham at the annual meeting of the National Veterinary Medical Association, where Professor Macqueen brought forward

a very interesting and instructive paper upon operations of the abdominal cavity, more especially in horses. Hitherto they had always been led to believe that an operation into the abdominal cavity was almost certain to be attended with fatal results on account of the extremely sensitive nature of the peritoneum. When they thought of the enormous injuries and the extensive wounds seen in the abdominal cavity of horses, with protrusions of the intestines and of the omentum, which under some circumstances was removed, and the ultimate results which had not been anything like fatal, it was worth serious consideration whether up to the present time they had not thought wounds of the abdomen much more serious than they really were. Take the operation adopted for the removal of the testes in rigs. How was it done? They put the animal down, made a slit in the scrotum, drive your arm in, push your hand through the muscles, rupture the peritoneum, poke about amongst the intestines and remove something, probably the testes. After a bit the animal is allowed to get up and he does very well. There has been no antiseptic precautions, no chloroform to keep the animal under proper conditions, but after doing all this the animal recovered. At the present time of day that could not be a proper method of operation. In ordinary surgical practice they saw the most extraordinary operations performed with proper antiseptic precautions under chloroform which in days past would have been thought to be thoroughly impracticable. He knew the difficulties veterinary surgeons laboured under in regard to antiseptic treatment. They might be called in to attend a horse with a twisted bowel, strangulated hernia or it might be a calculus which they could detect by an examination per rectum. Was there anyone amongst them who would dare to put the horse down and operate on him in the farmyard, say. Though he appreciated what Professor Macqueen had put before them he very much doubted whether veterinary surgeons in ordinary practice were in a position to carry out properly the antiseptic precautions necessary in operations of the kind, and he would like the members present to give their practical experience as to the advisability of having recourse to these methods which were thought right to adopt in cases of the kind. As country veterinary surgeons would they be justified supposing they knew a horse had a calculus, immediately on finding that the calculus in the intestine was causing an obstruction to put him down, and by incision into the abdominal cavity to attempt to remove that obstruction? Or should they let the thing take its course, and allow the animal to die? He had nothing to put forward in regard to what should be done. He wished he had; but when they saw the extraordinary abdominal injuries that horses received, he thought they should consider whether they ought not to be in a position to make more attempts to cure their patients than they had hitherto done. He had never opened the abdominal cavity except in case of castration, and in removing a foal at chance times from a mare and her immediate destruction afterwards, or by accident, and he would like to know if members of the Society had, and could suggest any way or means whereby they might carry out these operations with anything like a hope of success. He thought that they ought to do so. Their surgery should be quite equal to that of the sister profession. Certainly veterinary surgeons had not the feelings of their patients to consider, which their professional brethren had, but they had very great difficulty in carrying out the antiseptic treatment in a proper manner, which doctors had not. They could not get clear of the horse's surroundings. If a man had to be laid on the table and his bowel taken out, scraped or cut, or what not, doctors could do it in a clean, suitable room, with all the proper antiseptic treatment required. There were generally three or four surgeons present to assist—some one to administer the chloroform, another one to watch the sponges, a third to see that proper antiseptic measures are taken, and the rest of it, and

the operation is probably successful; and very good it all is. If their patient dies, they are free from all blame and responsibility. They have done that which is best; they have endeavoured to save the life of their patient, and, if he dies, they have simply failed. He would ask again, could they put the same rules and regulations into force in regard to their patients? He had very serious doubts of it. If they had a calculus to deal with, they made an incision into the abdominal cavity; they might succeed in finding it and bringing it to the opening; then they had to remove it, and the probability is, where it had to be removed from the intestines, it would mean an incision through the bowel itself, which would be a much more serious operation than simply opening the abdominal cavity. Whether it would be successful or not, he did not know. So few of their members were present at the National Association meeting, that he thought the subject was one which he might reasonably place before them. He desired to ask Mr. Bower if, in the course of his experience in a case of obstruction from calculus, he had been able to detect it by rectal exploration, and where he had done so, if he thought it at all probable that he could have removed it by operation.

Discussion.

Mr. BOWER said the subject was a very suitable one for discussion. He had detected calculi by exploration of the rectum. Before they could operate on the abdomen, they had to obtain the consent of the owner, and have someone to assist them; but there was something worse to fear than the operation, and that was the after treatment. Position had a great deal to do with it. They could operate on a domestic animal the same as on a human being, but they could not get the domestic animal into a position favourable to the recovery from the operation. The next thing was food. They could give the human patient very little of that which might be nutritious, and he would eat it without any pain or fighting, but it was difficult with their patients if they had to pour anything down them, because if they were put under restraint, the least exertion on their part would strain severely the effects of the operation. He believed that many of the abdominal operations could be performed, but it was the after consequences that they had to fear. He had never opened the abdomen except in castration, and he had seen this most cruelly done; perhaps he had done it in a cruel manner. Occasionally, when they had to operate, they placed one hand up the rectum; they had only one assistant, who took half the dung off, and then in went that arm into the rectum. However, the patient got up and probably did well. In another case they might take the greatest care, and yet the patient died—not of the operation, but from dietetic treatment, and so on.

The HON. SECRETARY said that he was present at Birmingham, and he also read the paper. He was never more surprised in his life, after seeing some of the specimens, to think that such operations could be performed on the abdomen of the horse. He did not really believe them possible. He saw one specimen. The flank of a horse had been opened, an intestine taken out, an incision, perhaps, six inches long, made, stitched up, and the whole intestine had healed perfectly. A specimen was also shown in which Murphy's button had been introduced. A section was made in the gut of a horse, a piece taken out, the two pieces of the gut had been joined by a button, and the horse passed the button. He was sorry to say that Professor Macqueen's horses died, but he had an excuse for each of them; but whether they died or not, that was a beautiful and successful operation, and there was every reason to hope in the future for the success of these operations. It was not for them to concern themselves with the theoretical part of the operation. What affects them most of all was the practice. Two months since he was himself in a muddle. He operated on a colt, and immediately afterwards,

before he got up, the man told him that the colt was blown. He put stitches into it and led it up, but as soon as it was up he saw that the intestines were through. He left instructions for it to be watched, but he was soon fetched, and found the animal in great pain. He reduced the hernia, but the colt died, as he, of course, expected. He thought how peculiarly they had to reduce this hernia. After he had once passed his hand in, he could not for the life of him get the intestine back until he had made an incision in the internal abdominal ring. That was a case, of course, in which no other operation would have been successful, but in case of ordinary strangulated scrotal hernia, why not make an incision in the flank and reduce the hernia from the inside? In simple cases we can reduce it per rectum. Why not tap a distended gut with a trochar and canula, and reduce the hernia from the inside? Just the same with rigs. Why not operate directly from the flank instead of tearing a hole, and breaking through the scrotum and abdominal ring? There was no reason why that should not be done, the wounds healed. Why not open the abdominal cavity of a horse under antiseptic conditions, and carry out the treatment with the same precautions? He had seen rig operated on, and never saw a bigger piece of butchery in his life, and he would never attempt to operate for rig in a similar way. He thought they were perfectly justified in opening the abdominal cavity. He remembered a case of a horse in that town which had reared up and come down on some palings, and made a hole straight through. He could put his finger into the abdominal cavity. He had the wound strapped round, applied antiseptic treatment, and in a fortnight the wound was perfectly well. Mr. Bower spoke about feeding. It took a long time to starve a horse. A horse could take a certain amount of nutrition without putting the twitch on or drenching them with this or that. If they left their patients alone without this extra food or nutrition, they would do a great deal better than if it were forced upon them. In the case of abdominal injuries, his line of treatment was to start the poor brutes on opium, and give them nothing to eat until he was satisfied that they were recovering. The bowels did not want to be put into an extra state of activity, and he liked to keep the bowels as quiet as possible. It was difficult indeed to carry on one's operations under purely antiseptic treatment, and they knew how they had to go about spaying pigs, examining a horse's teeth, then cutting a litter of pigs and so on, and they went at it without thinking any more about antiseptic than any other man. He went to operate on a litter of pigs for a man in his district. Just as he was about to close the hole out came a little piece of intestine. His assistant shut up the pig's leg rather quickly, and the intestine came on to his knife and out came some ingesta. He stitched it up and the pig lived. Pigs suffered all sorts of severe injury to their intestines and seemed not at all liable to peritonitis, and in some cases, whether of a pig, colt, or ox, they knew that the mischief was more or less septic. It might be said that in going from one case to another, as they did, they were sure to introduce some septic material. There was a certain amount to be expected, but in the country there was not half the amount of septic material in the atmosphere, and on their hands or instruments, that there would be in towns, and they had a better state of affairs to deal with. If he could positively assure himself that an animal had an obstruction or a calculus that could only be removed by operation, he would not hesitate for a moment to operate. The difficulty they had to contend with, which was generally recognised, was that when they diagnosed the animal was as a rule dying, and if death took place they put it down to the operation rather than to the condition of the animal. (Mr. Bower: If we do not our employers do.) Although good might come from that discussion, and from abdominal surgery, it was a fact that although

they had to treat their patients to the best of their ability, they dare not perform these operations until they knew that the animal could not get any better, and that anything else was hopeless.

Mr. TURTILL said that he was rather free with operating and he liked to cut these poor animals about, especially when left alone. He narrated an amusing instance of a farmer's wife, who had seen a veterinary surgeon open a cow's abdomen, making an incision six inches long in a cow with a calving knife. She scooped out the contents of the stomach with her hand and then left the animal until her husband came home, who sent for him. He put his arm down between the stomach and the abdominal wall and got the stuff out that had fallen there. He had no catgut sutures and therefore put in some stitches in ordinary thread, and the hole healed up until it was only about the size of a farthing, and gases passed through this hole for some time. He had operated in two or three such cases, emptied the stomachs and the animals had got on all right. There was no comparison between operations on the ox and the horse. They spayed heifers up to two years old and could pull them about anyhow. He had pulled at them until he thought he should pull the back to pieces. It was different with horses. As to the antiseptic treatment if they kept their hands and finger nails clean and introduced them into a clean horse they would not do much harm. In operating on rigs they must have a dependent orifice and they kept their fist there until the horse got up when he closed it. In regard to scrotal operations the hand must be worked up the natural canal and this was the only way of doing it properly. If this path was missed they had to tear one way or another, and got a collection of pus. If they kept their fist there the bowel would be prevented coming into the canal and when the horse got up it would keep in its place. He had a case of a horse with strangulated hernia and the gut came through. He operated. It so filled the cavity that he could not get his fingers into the inguinal ring but he eventually pulled it through. The horse got well and worked for three years after.

Mr. BARR said that in regard to the administration of chloroform in operations, was it not one of the best antiseptics applied directly to the wound? Would not chloroform applied to the nose have a general antiseptic effect by destroying germs in the blood or which had gained access to the blood?

The PRESIDENT of the Royal College, rising at the invitation of the President, said it was a real treat to come into a county where one heard the opinions of practical men alone. He looked upon Norfolk not alone as a breeding county of a very excellent class of horses, but of animals in general, more particularly of the ox tribe. It was therefore interesting to hear their opinions because he knew that they came from men who had made experiments, and who did not merely quote college authors or works which they had read. The subject of abdominal operations was undoubtedly a very large one. The members of the National Veterinary Association at Birmingham were a whole day discussing it. He quite agreed with Mr. Shipley, sen., that he was right in introducing it, and though the paper of Professor Macqueen was really private to the National Veterinary Association he was sure the Professor would feel not only flattered but grateful that the matter had been introduced to so many practical veterinary surgeons, because the more the subject was ventilated the more popular would it become and the more were they likely to learn from its discussion. Unquestionably the veterinary surgeon did labour under an extraordinary amount of difficulty in regard to the antiseptic treatment advocated in the paper. He pointed out to Professor Macqueen at Birmingham that his operations in abdominal surgery were upon healthy animals. Every animal that he operated upon was kept for a certain time. Professor Macqueen in answer to that objection said that he did not keep these animals for any particular reason,

or in order to prepare them in any particular way, but that the season of the year he selected for these particular experiments was especially cold, and he kept them in order to select a favourable day for the operations. That was all right, but if abdominal surgery was to become general by veterinary practitioners, could they delay their operations. Take for instance the excision of twelve inches of the small intestine referred to in the paper. In the first place they had to decide whether it was 12 or 24 inches of intestines which had not only become inflamed, but had perhaps gone on to mortification, and then they had to decide upon the right time for operating. He therefore agreed with the hon. Secretary, who said that they were not justified in resorting to these operations until every other remedy had been tried. In the case of this excision of 12 inches of the small intestine, what did the operation consist of? Opening the abdomen under the most favourable circumstances in a farmyard, perhaps he might say a stinking farmyard. They arrived at the conclusion that it was necessary to perform the operation at a time when perhaps they had not even an ordinary assistant with them. There was no time to call in the aid of professional brethren who resided in neighbouring towns, there was 12 inches of the small intestine badly inflamed, which must come off in order to bring about recovery. They had therefore to cast the animal, open the abdomen, and remove this length. Then they were asked to have full confidence in the operation of joining the two ends together by means of a button, which they had to leave the horse to get rid of as best he could through the ileo-cœcal valve. Those who know more of that valve than others would be able to work out the problem how he was to get rid of this indigestible button. One thing he was struck with at Birmingham, after inspecting the specimens, was the absence of adhesions after the operations. Many of them were under the impression, if they had had any experience of abdominal surgery, that after cutting into any serous sac that operation would be succeeded in time by a certain amount of adhesion. There were adhesions after the simple operation of spaying the pig when indignant owners who occasionally lost pigs through extensive adhesions of the intestines declared that the operator had sewn the intestines to the side of the animal. He was very much struck too with the manner in which the ends had united where a six or twelve-inch excision of the large intestine had been made. It was simply marvellous. He thought that Professor Macqueen had occasionally to refer to the fact that abscesses formed in the muscular tissue after operation, but in the cases that he inspected at Birmingham he saw nothing like a serious amount of adhesion between the bowel and the abdominal parietes. On the contrary he was struck by the absence of it. Gentlemen who were not members of the National Association would be glad to know that Professor Macqueen urged them not to include the muscular coat of the bowel in the operation but in all cases to secure the serous coat, and the serous coat of the bowel and the healing of the muscular coat would certainly follow. He hoped that the introduction of so important a subject as this at the National Veterinary Association meetings would be a proof to those who had not already joined that Association of the extremely valuable character of the papers produced by it. When he told them that it had been decided by those who were responsible for the conduct of the National meeting not to publish these papers or the discussions they would see that it was necessary for those who had not joined the Association to do so if they wished to profit by such papers. They would find that ten shillings was well spent in becoming a member. In referring to the difficulties of abdominal surgery, when he asked them to consider Professor Macqueen's advice in these cases he should perhaps say that he forgot how many instruments he advised they should have ready by them, and how they should be kept before operation. The Professor

recommended that they be kept in a closed oven until they were likely to be wanted, and then he suggested that they should have threaded as many as twenty-four needles for an operation. They must also wash and shave and disinfect the skin. They could therefore judge how extremely difficult it was for them to perform laparotomy and enterectomy. He believed, however, that what Professor Macqueen had done had given them encouragement to go on, and the greatest credit was due to him for it. He had demonstrated that there was not that extreme danger in operating, certainly upon healthy animals, by cutting into the abdominal cavity which they certainly once supposed to exist, and as time went on they would be able to demonstrate to themselves through meetings of that kind, and to their fellow practitioners, that a good deal could be gained by the introduction in the first place of the paper by Professor Macqueen at the National Association, and seconded by the very excellent remarks of the Hon. Secretary.

Mr. SMITH quoted from an old volume of *The Veterinarian*, dated 1828, an interesting case bearing on the subject. It was given by Dr. Cheselden, who stated that "a cow was suffering from constipation of the bowels." Thomas Brayer, a doctor of cattle, opened the ox in the flank, and took out a great part of its bowels, upon searching which he found there was a perfect stoppage in the guts, and the gut was about the stoppage putrified for three quarters of a yard, whereupon he cut off so much of the gut as was putrid and took it quite away, and then drew the ends of the guts which remained sound after what was cut off, together upon a hollow "keck," which was about three or four inches long, and sewed the said ends of the guts together upon the said "keck," leaving the "keck" within the guts, and then sewed up the whole cut in the hide upon the flank of the ox. Within the space of one hour after this operation the ox dunged, and the pieces of the "keck" that the said ends of the gut were sewn upon came away with the dung, whereupon the ox recovered and lived to do the owner service several years.

Mr. W. SHIPLEY, sen., said he hoped Professor Macqueen would not object to his introducing the subject. He had no idea of criticising his paper in any shape or form, and if he had in any way encroached upon his province he hoped the Professor would overlook it. So few of their members attended the National meeting at Birmingham that he thought that it would be a good thing to introduce it not only to hear their opinions but to show them how necessary it was to belong to such a good Society as the National Veterinary Association. He had heard that the National was to hold their 1896 meeting in the Eastern Counties, and he hoped every member of their own Society would make it their aim and object to attend. If one and all joined it, it would be a grand thing for the profession at large.

The PRESIDENT said that he had never performed any of the operations which had been mentioned, but he had heard of them, notably one case 22 years since. He castrated a good many colts in the season and he only had had one case in which the bowel came out. He was castrating a great three-year-old colt and after he got up he found six or seven yards of bowel under his legs, and he therefore took his gun and shot the colt. They had had some interesting speeches and he moved a vote of thanks to Mr. Shipley, sen., for introducing the subject, and to the President of the Royal College for his contribution to the discussion.

Mr. BOWER seconded and the vote was passed unanimously.

After brief acknowledgments a similar vote to the President closed the business proceedings. The members subsequently took tea together with their wives and lady friends, thus pleasantly closing a most enjoyable meeting.

ABDOMINAL SURGERY.

BY PROFESSOR J. MACQUEEN, F.R.C.V.S.

The numbers refer to a list of references given at the end of the paper.

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The forward direction of this incision is opposed to all teaching, but its advantage is conceivable. The upper hind limb is unhobbled and drawn backwards. The wound gapes and exposes the internal oblique muscle, which is then cut with scissors in the direction of its fibres. A similar opening is made in the transversalis. The third wound exposes a layer of fat which is lined by peritoneum; this is pierced with the finger, and the opening is enlarged with scissors in the direction of the transversalis wound.

Incision and Suture of the Bowel.—In Félizet's case the gut was opened two fingers' breadth from the mesentery. So far I have only opened the bowel at the middle of the longitudinal band—where the wall appears strongest and most capable of supporting sutures. With sharp-pointed elbowed scissors the gut can be punctured and the wound extended without the slightest difficulty. The wound is closed with sutures of prepared Chinese twist No. 1. There are many methods of suturing bowel wounds, but Lembert's is the only one of which I have experience. Sutures applied by Lembert's method pass through both the serous and muscular coats; the mucous membrane must not be punctured. The needle enters one-quarter inch from wound, passes through muscle for one-eighth inch, then pierces serous one-eighth inch from the edge of the wound. It is then carried across the wound, reinserted one-eighth inch from edge, passed through a muscle for one-eighth inch, and brought out one-quarter inch from the wound. A glance at the diagram (Fig. 3) will enable anyone to understand the course of the needle. The sutures are placed one-eighth inch apart and tied separately. The ends are shortened to within one-quarter inch from the knots. Degive has improved this method by making the sutures continuous.

Operation.—Cast the horse on left side, and give chloroform. Wash, shave, and disinfect the flank. Spread sponge cloths, wrung out of carbolic lotion (5 per cent.), in front and behind area of incision. Incise skin and external oblique; unhobble upper hind limb, draw it backwards, and fix to a post or wall. Douche wound with warm carbolic lotion (2½ per cent.), and stop bleeding from skin and muscle. With elbowed scissors slit internal oblique muscle in the direction of its fibres, trim the edges, and stop bleeding. Snip transversalis with scissors, and extend opening with finger, taking care not to puncture fatty layer or peritoneum. Examine wound and check bleeding. Sponge with warm carbolic lotion (2½ per cent.), and remove excess of fluid. When satisfied that the wound is "dry," rinse the hands, push the finger through fat and peritoneum, and enlarge opening with blunt-pointed elbowed scissors. Pass a large sponge, wrung out of (2½ per cent.) warm carbolic solution into abdomen, and get tarlatan ready. Pass the hand into abdomen, bring out the bowel, and hold it gently until assisant has placed pieces of tarlatan, moistened with warm carbolic lotion (2½ per cent.) round the wound. This done, let the assistant take the bowel between his fingers applied like clamps, the hands resting one in front, the other behind the wound. Incline the bowel towards the horse's thigh, and slit the free border with scissors. Remove contents, and wash its mucous lining. With a fresh sponge clean the edges of the wound, and apply Lembert's sutures. Place the stitches one-eighth inch apart, and insert two or three beyond the wound at each extremity. Pass all the sutures before tying any. Wipe the edges as tying proceeds, and shorten the suture ends to one-quarter inch from the knot. When the wound has been closed, pull the bowel well out of abdomen, and let assistant renew his hold. Carefully sponge off clots, hairs, and suture

ends, and douche with boiled water that has been allowed to cool to about 106° F. Remove packing from round the wound, let the bowel slip into abdomen, and withdraw the sponge. Look inside, and, if necessary, pass in a fresh sponge to take up clots or fluid. Adjust the edges of transversalis wound, and excise protruding fat. Pass two or three sutures (twist No. 3) through internal oblique muscle, and sponge the surface with carbolic lotion. Re-hobble upper hind limb, and bring edges of external oblique together with a few fine sutures. Close the external wound with strong (No. 6) twist sutures passed through skin and muscle, tied in front or behind the line of union. Then slit skin and fascia downwards and backwards to two inches from lower end of first incision. This will drain the operation wound. Sponge the surface with carbolic lotion, and let the horse rise. Dust the flank with iodoform and tannin, insert aseptic tow in drainage wound, and cover the whole with carbolised cotton, protected with four layers of gauze. Support the dressing by winding calico round the body, and roller bandages secured with safety pins. Muzzle the horse for five or six hours, but leave his head loose. Encourage, but do not force, exercise. For a few days restrict his diet, which ought to be somewhat laxative. Dressings should not be renewed until oozing occurs; then re-dress, but do not plug the drainage wound. The dressings might be substituted with advantage by a pitch plaster or a mild blister.

Notes of Cases.—a. An aged brown pony gelding in poor condition; purchased three weeks before operation. Feeds well, but masticates imperfectly. Urine normal in appearance. February 15th.—Temp. 99·4°; pulse weak, 36; resp. 6. 16th.—Temp. 99·7°; pulse 36; resp. 6; skin washed and disinfected. 17th (date of operation):—Temp. 99·1°; pulse 36; resp. 6. 11.15 a.m.:—Pony cast, fixed, and chloroformed (three ounces consumed during operation). Hair removed from under part of abdomen, and skin disinfected with hot (5 per cent.) solution of carbolic acid. Incised linea alba for five inches through skin, subcutis, aud fibrous tissue to fatty layer, of which a piece was excised. The peritoneum was pinched up with forceps, punctured with scissors, and cut the full length of superficial wound. A loop of floating colon was withdrawn, and incised along the muscular band for three inches and a half. Blood oozed from the edges, but this was soon stopped by warm sponges. The wound was closed with twenty-two fine silk and six chromic gut sutures, applied by Lembert's method. Having tied the sutures and shortened the ends, the bowel was sponged, tested for leakage, and replaced in the abdomen. The bowels underlying the wound were swabbed, and the abdomen was closed with eight strong silk interrupted sutures, passed through the whole thickness of the wall from peritoneum to skin. The wound was further secured by seven fine silk stitches, placed in the skin between the strong sutures. Temperature at close of operation 95·2°F.; half an hour later 94·8°, and in ten hours it was 103°. The wound was dusted with iodoform and tannin, and covered with carbolised wool and gauze maintained in place by roller bandages.

18th.—Morning: temp. 102·7°; pulse imperceptible; resp. 14. Had moved about a little; eaten nothing, and passed fæces three times. Evening: temp. 101·7°; pulse cannot be felt; resp. 12; seemed lively; had eaten part of a mash; no symptom of pain. To have hyposulphite of soda in next mash.

19th.—Morning: temp. 102·3°; pulse 33, weak and intermittent; resp. 30 and blowing; mucous membranes dull red; discharge showing through bandages. Has eaten very little. Continues to defæcate; mucus on fæces, which contain whole oats. Wound re-dressed. Evening: temp. 103·5°; pulse 52; resp. 24.

20th.—Morning: temp. 103·6°; pulse 60; resp. 50, blowing a good deal; shows difficulty in swallowing, throat painful. Ordered simple electuary

dressing adjusted. Evening: temp. 105·2°; pulse 80; resp. 44. Applied mustard to throat; continued electuary. Refused a mash of steamed oats and linseed, but at midnight very little mash remained.

21st.—Temp. 105·2°; pulse 80; resp. 32. Has eaten some hay. Noon: uneasy, stepping backwards occasionally. [Fear adhesion of bowel to abdominal wound.] Dressing examined and found dry. Slight discharge from nose; breathing laboured, breath fœtid. Evening: had been down; shows symptoms of colic; had drunk a bucket of water; tries to tear the dressings. Later: still symptoms of pain; no improvement; punctured abdomen in front of wound. No effusion. Ordered morphia. Temp. 104·2°; pulse 80; resp. 96.

22nd.—Morning: temp. 106°; pulse 104; resp. 80. Blowing, sweating, and very uneasy. Breath very offensive. Will neither eat nor drink. Wound still dry. Noon: destroyed by chloroform.

Autopsy.—Wounded part of abdominal wall excised and examined; sutures intact; cutaneous edges united in some places; peritoneal edges closed and puckered, surface bright red and omentum adhering slightly to wound. Removed wall and exposed viscera fully: omentum, traced to stomach, unaltered; no fluid; peritoneum—parietal and visceral—glistening and apparently healthy. Floating colon examined; operation wound found four feet from double colon. Serous coat in front and behind sutures marked by small bright red patches. Colon was now tied in two places and contents forced against the sutures; no leakage. All but four sutures intact. Four chromic gut sutures missing. At this place wound was slightly opened by traction on serous membrane, when oozing of a milk colour appeared. Mucous membrane at wound appeared retracted and roughened. Stomach, small intestine, cæcum, and double colon healthy and more or less full of ingesta. Kidneys and liver normal; spleen marked by a few raised spots; bladder empty. Heart: ventricles show incipient endocarditis. Left lung enlarged by septic pneumonia, and at one place putrid. Right lung similarly altered at apex. Both contain a few hard tubercles.

b. Chestnut pony gelding about eight years old.

April 20th.—Temp. 100·2°; pulse 33; resp. 9. 21st.—Morning: temp. 99·7°; pulse 32; resp. 9. Cast pony and gave chloroform (six ounces and a half consumed). Shaved and disinfected right flank. Incised skin and external oblique downwards and slightly forwards. Wound seven inches. Unhobbled upper hind limb and drew it backwards. Broke through muscles to peritoneum, and checked bleeding and disinfected wound. Opened peritoneum with scissors and withdrew loop of floating colon. Incised the gut at muscular band for about three inches, and removed fæces. Washed the bowel and applied twenty-four Lembert's sutures of Chinese twist No. 1. Shortened ends; douched and returned bowel. Did not stitch peritoneum. Sutured abdominal muscles separately with carbolised gut, and closed the skin with strong twist. Inserted a rubber drainage tube, and dressed the wound with iodoform, carbolised cotton and bondages, as in Case *a*. Temperature at close of operation, 98·5; five hours later temp. 101·4°, pulse 44. Ordered sedative electuary and laxative diet.

22nd.—Morning: temp. 101·5°; pulse 35; resp. 16. Had passed fæces during the night. Looking well. Evening: temp. 101·9°; pulse 30; resp. 12. Condition promising.

23rd.—Morning: temp. 101·9°; pulse 54; resp. 16. Fæces coated with blood and mucus. Re-dressed wound and removed drainage-tube. Evening: temp. 132·8°; pulse 38; resp. 24, slightly blowing.

25th.—Temp. 101·9°; pulse 38; resp. 42. Re-dressed wound and discontinued bandages. Evening: temp. 102·9°; pulse 40; resp. 42. 28th.—Temp. 101·2°; pulse 36; resp. 44. Coughing; symptoms of catarrh. 29th.—

Temp. 99·8°; pulse 36; resp. 36. Re-dressed wound as before. May 1st.—Temp. 101·6°; pulse 36; resp. 20. Dusted wound with powdered boracic acid. May 3rd.—Temp. 99·8°; pulse 42; resp. 16. Convalescent; wound to be dusted occasionally with antiseptic powder. May 13th.—Temp. 101°; pulse 34; resp, 14. Destroyed by chloroform.

Autopsy.—Cutaneous wound healed except at lower extremity; peritoneal wound closed; transversalis and internal oblique wounds obliterated by fibrous tissue. An abscess existed within the external oblique muscle. Pressure forced pus through the unhealed extremity of cutaneous wound. Sutures secure, but somewhat relaxed. Colon examined for operation wound. which was found with difficulty two feet from double colon. Serous surface concealed by adhesion to colic mesentery. Somehow the gut had turned on its long axis and united with its own mesentery. Wound of mucous surface almost closed. All other viscera apparently normal.

c. Aged brown gelding, 15·2 hands, broken winded. May 10th.—Temp. 99·5°; pulse 30, irregularly intermittent; resp. 10. 11th.—In afternoon, immediately before casting, temp. 101°; pulse 38; resp. 9. Thrown and chloroformed (nine ounces consumed). Washed, shaved, and disinfected right flank. Incision seven inches downwards and backwards, subsequently extended for about three inches forwards and downwards. Unhobbled upper hind leg and drew it backwards, slit internal oblique and transversalis muscles in the direction of their fibres, and stopped all bleeding. Then pushed finger through fat and peritoneum, enlarged opening, passed hand in and brought out loop of small colon. Incised gut at muscular band to about three inches, removed fæces, cleansed the lining and applied twenty-one Lembert's sutures of prepared twist No. 1. Suture completed, the bowel was well washed with warm water and returned to abdomen. Closed muscular wounds with a few interrupted sutures of fine twist, and the skin with fifteen sutures of No. 6 prepared twist. Temperature 100·4°; breathing laboured. Wound dressed and bandaged as in other cases.

May 12th.—Temp. 102·4°; pulse 54; resp. 34. 13th.—Temp. 103°; pulse 52; resp. 28; wound re-dressed. 14th.—Temp. 102·6; pulse 50; resp. 32. 16th.—Temp. 102·8°; pulse 72; resp. 16; symptoms of influenza, mucous membranes dull red, eyelids swollen, lips and sheath œdematous; frequently backing against the wall. 17th.—Temp. 102·7°; pulse 44; resp. 16; re-dressed wound; still shifting legs and moving backwards; œdema inereased. 18th.—Considerably easier. 20th.—Temp. 101·3°; pulse 54; resp. 16; wound re-dressed. 22nd.—Temp. 100·6°; pulse 50; resp. 12; removed bandages. 27th.—Temp. 100·3°; pulse 48; resp. 24 (increased respiration probably due to excessive heat of that day); otherwise horse much better. 28th.—Out of danger; wound to be dusted occasionally with iodoform. Observation discontinued. Horse to be exercised every day. June 11th.—Destroyed by chloroform.

Autopsy.—Wound of skin healed except at drainage opening. Abscess within panniculus communicating indirectly with the drainage track. Deeper muscles closed; peritoneal surface attached to base of cæcum. Omentum adhered to surface of wound in colon. Mucous wound cicatrized. (After operation a small forceps was missing, and this instrument was found encapsuled and attached to the left abdominal floor.) All the viscera—except the liver, which was spotted—appeared healthy.

ENTERECTOMY.—Excision of part of the intestine.—This operation is indicated in some cases of invagination, "twist," or strangulation that cannot be reduced. Successful operations in cattle have been recorded by Brayn, Meyer, and Taccoen; and in dogs resection of the bowel experimentally has frequently been performed.

In operating on the small intestine of the horse, the abdomen may be

opened at the flank or near the linea alba. The bowel is brought out and clamped in front and behind the obstruction, care being taken to apply the clamps over sound bowel two or three inches from the strangulated part. Within two inches of the clamps, along a line near to the attachment of the diseased segment, the mesenteric vessels are tied; the bowel is then detached from its mesentery, divided at two places, and removed. The continuity of the gut is restored by continuous or interrupted sutures passed through serous and muscular coats of the inturned ends. The mesentery from which the bowel has been separated is carefully folded to the right or left, and secured by sutures of fine twist placed at the borders of the fold, or a piece of mesentery can be excised and the edges united by continuous suture; but whether folded or excised no gap should be left between mesentery and bowel. If clamps are not employed, the ends of the gut should be drawn over a piece of trachea or decalcified femur, and the edges inverted before applying the sutures. To protect the wound and support the sutures, Senn suggested that a bit of omentum should be applied and stitched to the bowel. But stitches are unnecessary, as the omentum readily adheres to the wound. In the human subject, continuity can be attained by lateral implantation and by lateral apposition as well as by end-to-end approximation. In the first, the posterior end is closed by continuous suture, and a hole is cut in the side of the bowel. The anterior end is then passed for an inch into the opening, and fixed by sutures. In the second, anastomosis is effected by means of Senn's perforated bone plates, or slices of raw turnip. The ends of the gut are turned in and closed; each is then slit open at the side about two inches from the end, and a bone plate or a slice of turnip to which sutures have been attached is inserted through the opening. The sutures are then passed through the wall of the gut and tied together to maintain the serous surfaces in apposition.

A metal "button," designed by Dr. Murphy of Chicago, has been recently introduced for intestinal approximation in man.

Many advantages have been claimed for this contrivance. Reading of its successful employment by many surgeons at home and abroad induced me to give it a trial in the horse. I procured the largest button made for the human subject, and soon found my opportunity. The horse was cast and chloroformed, and the usual antiseptic precautions were observed. The abdomen was opened two inches to the left of the linea alba, and the jejunum was brought outside. The bowel was divided, the ends and mesentery were secured by a running thread—according to Murphy's directions—and the button was inserted and closed. The abdominal wound was sutured, dressed, and bandaged.

The temperature after operation was 95·5°, and four hours later it was 102·9°. Early next morning symptoms of abdominal pain appeared. Temp. 103°; pulse 36, wiry; resp. 24. The patient was uneasy, looking round to his flank, lying occasionally, and rolling over slowly from one side to the other. These symptoms continued without aggravation till death, which occurred thirty-nine hours after operation. On removing the skin, an abscess with inspissated contents, lying against the peritoneum, was discovered in the right flank. This had not been observed at the operation. The abdomen contained more than a gallon of turbid fluid, and the bowels were congested throughout. Murphy's button was secure, the peritoneal surfaces adhered but were not united. The bowel in front of the button was blocked and distended for nine inches, and behind the button the bowel was empty. The mucous membrane of the distended portion was inflamed, but in front and behind the obstruction, it was normal. The liver was soft, flabby, and very pale; the

spleen, kidneys, and heart appeared healthy, and the lungs congested. The abdominal wound was satisfactory, muscular incisions closed, cutaneous sutures all in position. No sign of suppuration.

RUMENOTOMY (LAPAROGASTROTOMY).—Incision of the rumen and abdominal wall.—The origin of this operation is unknown. Probably it was suggested to an operator who had experienced difficulty in treating tympanites, to enlarge the punctured wound, and remove some of the contents of the distended stomach.

D'ARBOVAL (No. 50) mentions that Chabert (1781) had met with many cases of foreign body in the rumen and reticulum of cattle, and that extraction had been effected by incision of the left flank; and GOHIER (No. 51) reports that Saloz operated on a cow in 1828, and removed a buckskin glove from between the pillars of the œsophageal groove. It is doubtful if hair-balls in calves have been removed by rumenotomy, but it is certain that wool-balls have been extracted from the fourth stomach of lambs. LEBAS (No. 52) performed rumenotomy on lambs. He incised the left flank and rumen; introduced the thumb and index-finger through the paunch, reticulum, and omasum into the abomasum, withdrew the concretion, and closed the gastric and abdominal wounds by appropriate sutures. Lebas confesses that, while his patients appeared somewhat improved, they did not long survive the operation. All his experiments failed—a result in great part attributable to imperfect surgical methods.

For the extraction of foreign bodies from the stomach of cattle, gastrotomy was successfully performed by Obich, in 1864, and by SCHWARZ (No. 53), in 1871; and, as bearing upon this point, I would refer to four cases reported by Mr. SANTY (No. 54), of Norwich, in 1874. In each case Mr. Santy diagnosed foreign body and advised slaughter. Subsequent examination discovered a piece of wire netting in one, a pin in another, and wire in the others. Had these cases been treated, as they might have been, by operation, rumenotomy would have advanced considerably in professional estesm.

To relieve plenalvia, the condition for which rumenotomy has been mainly performed in this country, STEEL (No. 55), of Biggar, operated successfully on a cow in 1834. Youatt, while commending Steel for his decision in the case, discourages the operation, and advises the speedy preparation for the butcher of any beast "whose paunch had been distended to any considerable degree. . . ." This note of warning, appearing as it did in one of the volumes issued by The Society for the Diffusion of Useful Knowledge—works widely read then, and, as some think, too often consulted now—rather hindered surgical interference in many cases. Horsburgh, in the *Veterinarian* for 1842, complains of Youatt's advice, and of its tendency to damage veterinary practice by encouraging owners to sell sick cattle rather than risk treatment; and states that he never hesitates to operate, and in no case has he seen the least apparent bad result, either as to calving or feeding. In this communication Horsburgh gives particulars of his first rumenotomy (1836). He incised the left flank two inches below the lumbar transverse processes, and extended the wound downwards for five inches; fixed the stomach to the abdominal wall, and passed his hand through rumen and reticulum, and, as far as possible (half-way) into the omasum. To prevent passage of food into the peritoneal cavity, he sutured the rumen, muscles, and skin together; and covered the wound with adhesive plaster and a bandage.

Since 1842 few cases of rumenotomy have been recorded. One is given in vol. vi. of the *Edinburgh Veterinary Review*, and another in the *Veterinarian* for 1894. This remarkably meagre list would seem to show that rumenotomy is seldom performed, or that the operation is generally satisfactory.

Diagnosis.—The symptoms of plenalvia are well-known. Those which indicate the presence of a foreign body in the reticulum, as recorded by Santy, may be quoted with advantage, because Santy's diagnosis was verified in each case by *post-mortem* examination. "The symptoms of foreign agents impacted in the reticulum . . . are, partial or complete loss of appetite; rumination partly or wholly suspended; bowels regular and fæces natural. The animal has a dull, anxious look, expressive of continuous pain. He stands, as a rule, but when lying, does so on the left side; the nose is generally poked out, ears thrown back; the coat is staring; an occasional grunt is heard, which is much increased by the animal being moved about, or percussed on the right side. Percussion on the right side also causes pain, and gives a duller sound than natural; auscultation shows that the respiratory murmur is less distinctly heard on the right than on the left side. There is no cough, and the respiration is very little disturbed. Indeed, there is an absence of any definite disease rather than otherwise." (*Veterinarian*, vol. xlvi., p. 462.)

The operation need not be described, but a few points, sometimes discussed, may be noticed. The flank should be clipped and disinfected, then incised downwards and slightly forwards. To prevent peritoneal contamination by food, the stomach should be fixed to the abdominal wall before or immediately after opening the rumen. A strong suture passed through the last intercostal space and tied over the last rib, will maintain the stomach in position while the lower angle of the gastric wound is being secured. The stomach should be closed by Lembert's sutures of strong prepared twist; the muscular wounds by continuous and the skin by dossil sutures supported by a pitch plaster.

It remains to be said that the results of rumenotomy are not always gratifying. In aged animals, especially when operation for impaction has been delayed, recovery may be protracted, and in milch cows extremely unsatisfactory, because of the lessened secretion of milk.

Cæsarean Section (Laparohysterotomy).—The extraction of the fœtus through wounds made in the abdominal and uterine walls.—This operation is indicated, though not always performed, when delivery by the natural channel is impossible in consequence of insurmountable maternal or fœtal difficulty. Introduced with the object of saving the young, the operation at first was only carried out on the dead female. Improved methods and increased confidence, as well as the desire to relieve suffering, suggested the operation on the living with the hopo of saving both mother and young. But in human practice few surgeons were bold enough to undertake an operation which had been condemned as cruel and unchristian, and some of those who performed it did not care to own their work, probably because the result had always been fatal. In one city, still famous for the achievements of its surgeons, not a single case was successful in a hnndred years, and at Milan sixty-two operations yielded only three recoveries.

It is interesting to note that, according to Dr. Greig Smith (No. 56), one of the earliest successful Cæsarean sections was performed in 1500 by a sow castrator, who, being dissatisfied with the efforts of thirteen midwives and several surgeons, operated on his own wife and saved both mother and child. Before the employment of antiseptics and modern methods the mortality of Cæsarean section was seldom less than between 75 to 80 per cent.; but since 1860 the results have become more and more commendable (No. 56).

Recommended by Brugnone and Bourgelat, Cæsarean section has occupied a place in veterinary practice since the early part of this century. The operation as recorded has been performed fifty-one times altogether—on five mares, twenty-one cows, seven sows, two ewes, and seventeen bitches. Of the mares three were killed, one died, and one survived. Eight of the cows died, seven were killed immediately or soon after operation, and six recovered. Six of the

seven sows recovered, and of the bitches four died and thirteen recovered from the operation. Franck, quoted by FLEMING (No. 57), mentions forty-eight cases, twenty-five of which were unsuccessful; and St. Cyr and Violet in their *Traité d'Obstetrique*, 1888, give a summary of forty-one cases with twenty-eight deaths. These statistics, it must be confessed, are not encouraging, and at first view tend to hinder rather than promote confidence in the operation; but closer examination will show that most of the reports belong to a time antecedent to the employment of antiseptics in veterinary practice.

Recently *Cæsarean Ovarohysterectomy*—or extirpation of the uterus with its appendages—has replaced to a large extent the older operation in human surgery. Within the past twenty years this operation (No. 58) has been performed nearly 300 times, with favourable results in from 40 to 50 per cent. of the cases. In 1768 the possibility of removing the gravid uterus in animals was proved experimentally by CAVALLINI (No. 59) of Florence, who operated on dogs and sheep; and similar experiments were performed by Drs. Blundell, Fogliata, Porro, and Rein. In veterinary practice MACORPS (No. 60), a Belgian veterinary surgeon, and FESER (No. 61) have successfully excised the uterus in pregnant bitches. Although no English veterinarian has recorded a case, I may state that laparohysterectomy has been performed in this country, and more than once with unqualified success.

In performing Cæsarean section, chloroform should be given, and the flank should be prepared and incised as in laparotomy. The incision should measure, according to the case, from five to sixteen inches. Having exposed the womb, it should be incised on its upper surface, and the wound extended by probe-pointed scissors. The fœtal membranes if still intact should be ruptured; and to prevent soiling of the peritoneum a piece of mackintosh cloth should be spread over the lower part of the abdominal and uterine wounds. If the cord can be reached it should be tied and divided before the fœtus is removed. In the bitch, as suggested by Degive, advantage will be gained by bringing the womb as far as possible out of the abdomen before incising the horn. After extracting the fœtus the membranes should be separated and withdrawn through the vagina if possible. The uterine wound should be closed by Lembert's sutures; this done, the womb and adjacent viscera should be douched with warm water that has been boiled. Excess of fluid is then removed by aseptic sponges, and sutures are placed in the abdominal wound, which is subsequently dressed and bandaged in the usual way.

In hysterectomy, excision has been effected by the ecraseur and by the knife, with ligature of strong twist secured by a Staffordshire knot. The stump may be allowed to drop back into the abdomen, or it can be sutured with the wound of the flank, and a few days afterwards set free.

HERNIOLAPAROTOMY.—Abdominal section for the relief of hernia.—"Gut-tie," or pelvic hernia in oxen, is the condition for which this operation has been most frequently performed. At one time cases of "gut-tie" were not uncommon, but since 1863 very little has been heard of the disease. In 1795 Mr. HARRIS (No. 62), a Herefordshire farmer, in a communication to the *Repertory of Arts and Sciences*, blames the erroneous method of castrating calves then pursued in Herefordshire as the chief cause of the production of the hernia, and endeavours to explain how the accident occurs. He states that "the part which is tied is the jejunum at its turning from the left side to the right; there the bow of the gut hangs over the bow of the *vas deferens*, which by a sudden motion of the beast forms a hitch or tie of the string." Harris operated on animals from three months to nine years old. He opened the left flank under the third lumbar vertebra, introduced his hand, and divided the cord with a small curved ring knife, like that sometimes used in embryotomy. For pelvic hernia the operation has been performed by CORBET (No. 63); MEGINNIS (No. 64); ANKER, of Berne (No. 65), 44 cases; VINE

(No. 66); CROWHURST (No. 67); WALKER, of Rugby (No. 68); and by STRAUSS (No. 69), who operated on 110 cases and saved 99. Walker had 14 recoveries in 19 operations.

HARRIS (1795), ANKER (1839), and WALKER (1858), describe the operation. From Walker's description I take the following:—"The animal, placed in a stall, is kept standing with his right side against the wall, and the hind legs tied together above the hocks. An incision is made on the left side, midway between the antero-inferior spinous process of the ilium and the last rib, in a line with the fibres of the internal oblique muscle, through skin, muscles, and peritoneum, large enough to admit the *left* hand, which is then passed upwards and backwards over the rumen to the right side, where the strangulated part may readily be felt. A small probe-pointed bistoury is then introduced, and the vas deferens divided. Having ascertained that the strangulated bowels are entirely liberated, three or four interrupted sutures should be passed through skin, muscles, and peritoneum, and the animal released."

GASTROCENTESIS.—Piercing the rumen for the relief of tympanites in cattle and sheep has been practised in all countries since very early times. The operation performed with trocar and cannula through the left flank is familiar, simple, and generally successful. A few cases have been recorded in which puncture was followed by peritonitis induced by the escape of gastric contents into the peritoneal cavity.

In 1838 it was suggested (No. 70) that gastric tympany in the horse might be relieved by puncturing the stomach with a long curved trocar and cannula passed through the abdominal floor; but I have not been able to find the report of a single case treated by this method. Gastric flatulence is not a rare condition in horses, but I doubt if the stomach—even when distended and somewhat displaced—can be safely reached through the abdominal wall. In other operations with the trocar there is some degree of certainty that the instrument will directly pierce a cavity or a dilated viscus, but in attempting gastric puncture in the horse the flexures of the colon, and perhaps the spleen, would probably be encountered on the way. The danger of the operation lies not with the stomach, but with other viscera which might be transfixed by the penetrating trocar.

PARACENTESIS ABDOMINIS.—Tapping the abdomen for the evacuation of ascitis or other fluid.—This operation, which is neither difficult nor dangerous, though rarely required in horses, cattle, or sheep, has been frequently performed on dogs. Palliative rather than curative paracentesis gives the patient ease, and sometimes lengthens life. The puncture may be made in either flank. The linea alba should be avoided, because punctured wounds of that part heal slowly. An instrument of small calibre should be employed. In operating on the dog a many-tailed bandage will be found useful to supply counter-pressure as the fluid escapes. Having removed the hair and disinfected the skin, the bandage is applied, and a "window" cut at the seat of operation. The trocar or aspirating needle should be pushed slowly into the abdomen. There is little risk of wounding the bowel, which is generally anæmic and retracted. The escape of fluid may be interrupted by omentum, gut, or solid particles. Whether all or only a part of the fluid should be removed at one tapping is sometimes discussed, but the question is of little moment. With the bandage well adjusted all the fluid may be withdrawn—perhaps with advantage. When carefully secured, the bandage to some extent retards re-accumulation, if it does not altogether prevent it. For this purpose, or to arrest the secreting power of the serous membrane, injections of a weak solution of iodine, as recommended by Leblanc more than fifty years ago, have been used successfully by ST. CYR (No. 71) in three cases of ascites in dogs. Of this treatment by injections I have no experience.

In connection with paracentesis I should mention that uterine and ovarian

dropsy has been relieved by tapping through the flank. STEEL of Biggar (No. 72) removed 102 quarts of fluid from the uterus of a cow, and W. FIELD (No. 78) operated twice on a mare, and withdrew altogether eight gallons from an ovarian tumour.

ENTEROCENTESIS.—Puncturing the bowel in tympanites.—Vegetius (4th century) recommends abdominal puncture in the treatment of strophus or pain in the belly. (No. 74.) He says:—"But in this distemper by frequent wallowing the horse nourishes and increases the wind within himself and contracts a tympany . . . which distemper, if you would for ever remove, you shall perform the operation of tapping in this manner:—About four fingers' breadth under the navel towards his yard in the middle region of the belly you shall thrust in the lancet so as you may not only open the skin, but also the peritoneum itself . . . after you have taken out the lancet you shall thrust in the pipe which farriers use to carry about with them."

It is doubtful if the "pipe" was passed into the bowel, because in prescribing a similar operation for dropsy Vegetius cautions the operator not to "touch the intestines and kill the animal."

Enterocentesis was mentioned by Markham in 1656, and was practised for the relief of tympanites in horses by Roem of Dresden, in 1776. Bourgelat and Chabert (1781) operated through the rectum, aud Barrier and Herouard—somewhat later—through the right flank. For many years after its introduction, enterocentesis was viewed with much apprehension because of the occurrence of abscesses between the muscles of the abdominal wall and of the frequent deaths, which were often attributed—rightly or wrongly—to the operation. VATEL (No. 75) expressed the fear that peritonitis might be induced by the use of the instrument; and Chabert warned intending operators of the danger of inhaling the mephitic gases, advising the injection into the rectum of "antiputrid" substances—perhaps the earliest suggestion of the employment of antiseptics in veterinary practice. Somehow the operation lost ground and fell into desuetude until 1834, when it was revived by Professor Bernard at Toulouse, and soon after by Rey at Lyons, and by Chabert in Paris. Numerous experiments were made to prove that the horse's bowel could be punctured without danger, and that the formation of abscesses at the seat of operation could be prevented by attention to cleanliness.

In this country the operation was revived—if not performed for the first time—by STEWART of Glasgow (No. 76) in 1836. But Stewart's limited experience, while it startled a few, failed to convince many. The old conservative treatment of flatulent colic prevailed; and even Stewart's enthusiasm was lukewarm, for he remarks in words as appropriate now as then:—"That an operation performed in France is not exactly the same to us as an operation performed in this country." Progress was slow, and complaints of competition were seldom made. Always busy in those days, veterinary surgeons did not encourage new-fangled operations. But treatment must vary with advancing knowledge. Since 1850 enterocentesis has gradually gained the confidence of practitioners everywhere as a ready, harmless, and frequently successful means of relieving tympanites in the horse. The symptoms of the condition are familiar; but sometimes one meets with a case in which the abdomen is much distended, and yet no gas can be found with trocar and cannula. In torsion of the large intestine, when hæmorrhage into the substance of the bowel has occurred, blood may escape from the cannula. The operation, if it fail to relieve distension, may assist diagnosis; more than once a horse has been promptly destroyed when blood instead of gas spurted from the cannula, and in every instance *post-mortem* examination revealed a hopeless condition of the large bowel.

The seat of operation is the right flank, but the left may be punctured. Rectal puncture, abandoned soon after the decease of Chabert, has been

recently revived by FOHRINGER and IMMINGER (No. 77); against this method may be urged the risk of peritonitis from septic contamination, but with a small and clean trocar the objection may be disregarded. The flank operation, however, is simple and safe.

The complications which attended enterocentesis many years ago were probably caused by want of care in selecting and cleansing the instrument. Trocars of excessive size and in all conditions were employed; and perhaps some of the unsatisfactory operations of the present day might be explained after examination of the instrument. The trocar and cannula, beyond the the handle, should be somewhat flattened, and should measure roughly 6 inches by 3-16 inch. It should be warmed and disinfected before, and cleansed and again disinfected after the operation. In operating it is advisable to disinfect the skin and to remove the hair, but I must confess to having operated frequently without preparing the skin. To prevent the gut from slipping off the cannula, Brogniez, in 1843, designed an enterotome, which has, however, received little commendation. When employing a fine trocar and cannula I invariably first puncture the right upper flank; and if no gas escape, re-introduce the trocar four to six inches below the first puncture. In many cases I have punctured both flanks at several places, and in one horse I punctured the right flank in seven places without complication. Beginning at the upper flank the trocar may be safely introduced at intervals of a few inches downwards behind the last rib to the abdominal floor. I refrain from naming the bowel, because in flatulent colic sometimes one and sometimes another part of the gut is distended and in contact with the flank, and to wait until one can ascertain which bowel is most dilated is neither advisable nor advantageous.

The effects of the operation, when successful, are at once apparent; gas escapes, distension subsides, respiration becomes easier, pain disappears, and the patient recovers.

Before withdrawing the cannula some practitioners pour medicine into the bowel, but the practice is not always free from risk.

The treatment of umbilical, ventral, and scrotal herniæ; Oöphorectomy, and the castration of abdominal cryptorchids must be left to a special paper by another writer. But to strengthen my case for the encouragement of peritoneal surgery, reference should be made to spaying—an operation which until 1850 was always performed through the flank or the liaea alba. Passing by the operation on the sow, which dates from the time of Aristotle and of Pliny (A.D. 73), the cow and mare have been castrated since the seventeenth century. OLIVIER DE SERRES (No. 78) describes the operation; and Bartholin, a Danish anatomist, gives particulars of the practice as pursued in Denmark in 1631. From this time the spaying became more or less general in France, Prussia, and Denmark. In 1717, because of its effect upon horsebreeding and some less important objections, the castration of the mare except in special cases was prohibited in France. In Enlgand spaying was practised in the eighteenth century. Boardman's Dictionary, published in 1804, contains a note to the effect that John Lawrence had seen an advertisement sixty or seventy years old of "Grass for Spayed Mares"; and King, of Stanmore, in 1829, states that he has read and heard of filly foals having been spayed with safety.

The castration of ewe lambs, to hasten fattening and to improve the wool, was first practised by DAUBENTON (No. 79), in 1768; and the *Veterinarian* for 1831 contains a description of the operation by J. Fulton, who states that he has operated on 2,500 ewes. The operation on the cow was revived in 1831 by Thomas Winn, a hotel keeper at Natchez, U.S.A. Winn had read that at ploughing matches in the southern counties of England the prizes were generally adjudged to the ploughmen who worked spayed heifers. A year

later, Levrat, of Lusanne, "anxious to repeat the experiments made in America," operated on three cows, to ascertain if spaying really increased or maintained the secretion of milk. The result was sufficiently satisfactory to induce others to try the operation, and to extend its practice. Charlier, of Rheims, in 1850, after two years' experience of spaying through the flank, introduced the operation *per vaginam*——the method by which the cow and mare are now usually castrated.

I desire to acknowledge my indebtedness to Professor McFadyean for facilities placed at my disposal; to Messrs. Harrison, Hoole, and Dowell for valuable assistance at the operations; and to Mr. H. C. Reeks for his kindness in making the drawings.

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THE BACTERIA OF MILK.

DR. ROWLAND recently reports in the *British Medical Journal* (August 3rd, 1895), the result of an extensive examination which he has made of the milk supply of London. In twenty-five samples of milk examined bacteriologically, the average number of bacilli found per cubic centimetre was 5,000, equal to a little less than two million per dram. This is somewhat less than the number found in other investigations which have been made. That the number of bacteria found was so great is not to be wondered at, since Sedgwick found 30,500 microbes per c.c.m., or 122,000 per dram, in freshly-drawn milk; and Kohn has shown that germs may multiply at the rate of doubling every hour, thus producing, in three days, the inconceivable number of 4,772,000,000,000,000. The wonder then is, not that milk contains so many microbes, but that it contains so few. As regards the sources of these germs, we quote as follows :—

"Whence comes this extraordinary number of bacteria? It is not difficult to imagine their source if for a moment one recalls the usual conditions of the cows in even the cleanest and most hygienically managed of our dairies. The stable or cowshed in which the milking is usually carried on is itself saturated with excremental matter, the very straw the animals stand upon is too often but an incubating ground for micro-organisms; for, warmed by fermentation and saturated with fecal matter, it offers all the conditions of warmth and nutriment material for their best growth. The restlessness of the animals and the walking of the milkman disturb at each moment myriads of these micro-organisms, some of which, passing into the open pail, find in the warm milk all the conditions for life and active multiplication. That this is not an exaggerated picture will be evident when we state that fully ninety per cent. of the organisms found are the bacillus coli communis, the common inhabitant of all excremental matter.

"Other sources of infection are to be found in the dirty hands of the milker, unclean dairy utensils, and in the insecurity and carelessness commonly employed for the transit of the milk from the dairy to the consumer."

Of the various germs found, the bacillus coli communis was most abundant, constituting about ninety per cent. of all, indicating, at once, the fact that the milk was contaminated with the fecal matters of the cow, since the original home of this microbe is the colon of mammals. When found in water, this microbe affords evidence of sewage contamination. When found in milk, it means simply that some of the manure of the cow has found its way into the milk pail.

With reference to the possibility of excluding these germs, to which blood-poisoning, abscess, pleurisy, pneumonia, peritonitis, appendicitis, and even attacks similar to typhoid fever, have been traced, we again quote from Dr. Rowland as follows :—

"It may be objected that it is practically impossible to take such care that the colon bacillus can be absolutely excluded; undoubtedly it is, still it is an imperative duty which must be carried out if we are to have anything like a sterile milk supply. It may again be objected that a bacillus which is present normally in the intestines of the most healthy of us can do no possible harm if introduced from without. Such a contention would not for a moment hold good. It is a very different thing to possess a normal quantity of a certain constituent, and to possess a quantity that is abnormally large. It might with equal justice be argued that, because we already possess indol in our intestines, this is a desirable article of food, or that because we possess blood corpuscles therefore it is a good thing to have our vascular system crowded with them; but we all know that too many corpuscles are just as injurious as too few; and the same applies to the colon bacillus. Besides, it has been clearly shown that many of the milder forms of disease are closely dependent on the presence of abnormal quantities of the bacillus coli communis. It will

be sufficient to mention, among many others, its determining action in many cases of cholera nostras (Gilbert and Girode), cholera infantum (Lesage), cholecystitis (Charrin and Roger), etc. In fact, its *rôle* in abnormal quantities is by no means a small one, and its presence in milk, especially in such milk as might possibly be used for infant feeding, cannot but be a grave source of danger."

As regards reforms necessary to secure protection against the microbes of milk, the writer suggested the following :—

"1. That all milking be carried on in the open air, the animals and operators standing on a material which is capable of being thoroughly washed, such as a floor of concrete or cement. Such a floor could be easily laid down in any convenient place which can be found. The site chosen should be removed from inhabited parts as far as possible, and should be provided with a plentiful water supply. Only in this way does it seem possible to avoid the initial contamination with the colon bacillus.

"2. That greater care be expended on the personal cleanliness of the cows. The only too familiar picture of the animal's hindquarters, flanks, and side being thickly plastered with mud and fæces is one that should be common no longer. It would not be difficult to carry out this change ; indeed, in the better managed of our large dairy companies' farms such a condition no longer prevails, but in the smaller farms it is but too frequently met with.

"3. That the hands of the milker be thoroughly washed before the operation of milking is commenced, and that after once being washed they be not again employed in handling the cow otherwise than in the necessary operation of milking. Any such handling should be succeeded by another washing in fresh water before again commencing to milk.

"4. That all milk vendors' shops should be kept far cleaner than is often the case at present. That all milk retailing shops should be compelled to provide proper storage accommodation, and that the counters, etc., should be tiled."

It is not probable that these painstaking precautions will be carried out to any extent, at least in connection with public milk supplies, for many years to come ; consequently, we must manage to get along the best we can with our germ-infected milk, and must adopt, as a measure of precaution, the uniform practice of sterilizing the milk, either by Pasteurization, heating it to a temperature of 160° F. from fifteen to thirty minutes, or by boiling for the same length of time.

ABSTRACT OF PAPER ON CONTAGIOUS OR EPIZOOTIC ABORTION.

BY HARRY OLVER, F.R.C.V.S.

At various times, and in different countries, the causes of sporadic abortion already given have been advanced to account for the apparently ever-increasing scourge in our herds, but no single one or all of them put together can satisfactorily explain it, and I believe the theory of contagion or infection must prove the true one. For very many years the belief that some specific organism or virus was responsible for the disease has been held by practical men ; but our scientists will not be satisfied until they can isolate the microbe, and be able to assert positively that that and that alone produces the trouble. Such an investigation is now being conducted at the London Veterinary College on behalf of the Royal Agricultural Society of England. Scientists in other countries are also working on similar lines, and I hope the time is near at hand when the question of contagion may be definitely settled.

Personally, long before I became a member of the profession, I felt quite satisfied that the disease was a contagious one, consequent on an unfortunate experience on my father's farm in Cornwall. He was a breeder of Hereford cattle, and for fresh blood went into Herefordshire, and bought some in-calf heifers. Soon after one aborted, others followed, and for years after we scarcely had a live calf in spite of isolation and other care. My father subsequently took another farm thirty miles away, and the cattle went also. On this previously untainted ground abortion continued, proving that not the land, building, or locality was at fault, but that the herd carried the disease with them. Similar instances are very numerous, and can be quoted *ad nauseam.*

It is true that we have no evidence of the disease being in existence in wild cattle, nor have we any reason to believe that the virus has been conveyed to them. Many diseases are directly or indirectly the result of domestication, and were not known and probably did not exist in the primitive ages. Domestication in these days means, very largely, being artificial in everything—breeding, feeding, housing, milking, and so on. That this predisposes to disease there cannot, I think, be a doubt, and we are all aware that a weakened constitution invites disease, whilst a robust, healthy, active animal in a natural condition would repel it. From epizootic abortion in the present day it would, I think, be fairly safe to assume that no known cattle-producing country can be said to be free. Great Britain and Ireland are infested with it. All European countries, whether from the extreme north of Russia or to the south of Italy, tell the same tale. America, north and south, and our various colonies are also troubled; and if, as I assume, it is contagious, then its wide distribution cannot be wondered at. For in these days of rapid transit do not our cattle and those of other countries get sent to every part of the globe? and no class of animal is imported into a country so frequently as pregnant cows or heifers.

One thing, I think, we may safely assert, viz.: that climate, geological formation, breed, good or bad sanitary arrangements, or season of the year, have little or no effect on the prevalence of the disease.

Probably the first writer in this country to suggest the contagious nature of the affection was Youatt, in 1834, although Clater and others, at a much earlier date, had spoken of it as sometimes assuming an epizootic character, but had not, I believe, expressed the opinion that it was either infectious or contagious. Professor Barlow, of Edinburgh, in 1851, points out that "in all cases of abortion before and after the expulsion of the fœtus, there is a discharge of mucous and glairy fluid from the vagina, which he believed contained the virus of the disease."

According to Fleming's Obstetrics the disease was particularly active some years ago on the Continent. He says, "Henzé mentions that in the Neuvre (France), in 1869, the loss to certain agriculturists amounted to 30, 40, and even 50,000 francs." In South Germany, in 1851-2, Reuff says it was very serious. Zundel mentions that it is frequent in North Germany, and Harms describes its prevalence in Hanover, whilst Strebel, in the centre of Friborg, Germany, says from 20 to 60 per cent. of the cows aborted in the wet seasons of 1878-9. It would be difficult to estimate the percentage of abortion in this country without a proper census being taken, but in the large breeding district in which I reside, I think 20 per cent. of the whole would not be above the average.

I have already stated that from an early date I have been satisfied of the contagious nature of the disease, not only from the experience I obtained on my father's farm, but from a large number of similar ones that have come under my notice as a practitioner. In enquiring from most farmers who have suffered from the disease, one generally hears that they never had it until a

cow, bought from so-and-so, slipped, and they have never been free since; and I have no doubt this is the experience of most practitioners in country districts. One also finds, more often than not, that it is thought to be one of the ills that has to be borne, and except, perhaps, isolation for a time of the recently aborted female, no attempt is made at either treatment or prevention

A very marked instance of the danger of introducing pregnant cows into healthy herds is quoted by Professor Penberthy, in the enquiry instituted by the Royal Agricultural Society of England as to its contagiousness. He says, "In the summer of 1894, whilst investigating the circumstances connected with occurrence of abortion in a Jersey herd, I ascertained, amongst other facts, that the proprietor, a landowner, had farmed the estate for many years, but previous to the summer of 1893 had no experience of abortion in his cattle. In 1892 he sold a cow reared by him to a neighbour some few miles distant. In 1893 this cow was re-purchased and brought back to her original home; about a month after her return she aborted; after a lapse of some time her abortion was followed by that of her immediate neighbours on either side of the cowshed, and since abortion has gone on to a serious extent in the herd. No new cow or bull has been introduced except the cow sold in 1892 and re-purchased in 1893." The Professor found that abortion was exceedingly troublesome in the herd in which the cow had been located for a year.

To Professor Nocard, the eminent veterinary surgeon and director of the Alfort College, France, is, I believe, due the credit of first bringing the question of the contagiousness of abortion thoroughly to the front, and this after most careful study, research, and experimentation, both in the cowshed and laboratory. His investigations, which were undertaken at the instance of the Agricultural Department of France, were reported on in 1886-7, and the conclusions he then formed have been generally confirmed by other workers since in different countries.

M. Nocard gives a decided opinion that the disease is not one affecting the cow generally—her health seems unimpaired—but it is one affecting the genital organs only of the mother; mainly, it is a disease of the fœtus and its membranes. He bases these conclusion, 1st, on *post-mortem* examination of cows about to abort; 2nd, on *post-mortem* examination of cows on the point of aborting; and 3rd, on *post-mortem* examination of cows that had aborted the previous year, and had not since become impregnated. The outcome of these experiments was that samples of blood, milk, urine, etc., taken from a cow killed the same day, after aborting a five-months-old calf, was found to be normal; but fluid taken from the cotyledons and lining membrane of the uterus were found, when examined under the microscope, to contain large numbers of bacilli and micrococci. After forty-eight hours the broth cultivations produced the same organisms, whilst that from other portions of the cow did not produce any. Other *post-mortems* had the same results. Then a cow that had aborted several months, and had refused the bull since, was killed. Her viscera was also healthy; but the fluid scraped from the lining membrane of the uterus swarmed with living organisms, whilst the fluid was found to have an acid reaction; that of healthy cows is alkaline. The fluid from non-aborting cows of healthy herds was found to be free from any such organisms.

M. Nocard further failed to find micro-organisms in the genital organs of cows from districts unaffected with abortion, but invariably found them between the mucous membranes of the uterus and the placental membranes of aborted animals.

M. Nocard further extends his inquiry by making observations of calves. He did not find the micro-organisms of abortion in the blood, bile, spleen, liver, kidneys, etc.; but in the fluid of the stomach and intestines, as well as

on the medulla oblongata, he got cultures of the same micrococcus as was found in the Liquor Amnii, etc. In these investigations it was necessary to examine calves born dead, as micro-organisms are always found in the alimentary canals of animals that have had a separate existence. Thus the Professor demonstrates the presence of these organisms in the alimentary tract of fœtuses that have been aborted, but cannot do so in those from healthy parents.

After carefully studying epizootic abortion from an anatomo-pathological and bacteriological standpoint, M. Nocard concludes thus: "The autopsy of diseased animals does not reveal any alteration of the thoracic or abdominal viscera, with the exception of the uterus. The peritoneal serous membrane is normal. Incision of the uterus reveals the presence between the mucous membrane and the chorion of a fibrous muco-purulent matter, which is more or less abundant, and often acid, in which the microscope shows epithelial cells, leucocytes, a large number of isolated micrococci, which are generated or associated in short chains of three, four, or five sections, and a few short thick bacilli, which are isolated or associated in pairs. In the cotyledonous liquid the bacilli are predominant; in the product obtained by scraping the uterine mucous membrane, both organisms exist in almost equal number. The amniotic fluid also contains them. In the abortive young, the intestinal mucous membrane is the seat of abundant epithelial desquamation, its tissue seems infiltrated with various microbes which exist in abundance in the contents of the intestines. These micro-organisms which are obtained in the digestive tube give an explanation of the diarrhœa by which they are affected in the two or three days following their expulsion. These calves have been aborted in an advanced period of gestation. In the aborted young which bellow continually during the days preceding death, the medulla contains micrococci which are identical with those contained in the amniotic fluid."

In a subsequent communication, 30th Aout, 1894, M. Nocard alludes to the researches of Professor Galtier of an outbreak of epizootic abortion at Placis, the property of the Marquis de Poncius, and says the disease differed from the one he investigated at Nièvre, in 1885–6. He further says, "I have come to the conclusion that the outbreak at Placis is of a different type to that observed at Nièvre." Proceeding, M. Nocard says, "I wish to put on record an observation which shows that abortion may indeed be set up by several kinds of organisms"; alluding then to a special outbreak which he investigated. After careful autopsy of the aborted fœtus, and making cultures, he found he was dealing with a pure culture of the *bacillus coli*. He proceeds to say the disease then was the result of an infection of the fœtus by the bacillus coli, an infection from which the mother appeared quite exempt. How did the bacillus get to the fœtus? The fœtus was born dead—a secondary infection, *post-mortem*, could not be set up. It seems probable that the microbe had been able to penetrate the genital organs of the dam during decubitus, the lips of the vulva coming into direct contact with fæcal matter and liquid manure which had saturated the ground. The Professor says, after making *post-mortems* of more than thirty aborted animals collected from 1885 to 1892, he had not been able in them to find an organism having any resemblance to the bacillus coli. He sums up by saying that "whatever may come out of these investigations, there are two facts which prove, first, that in beasts, as in man, the bacillus coli may take on pathogenic characters and be of importance as being the chief factor in producing grave disorders, often followed by death. The second fact proves, further, that in the interior of organs the bacillus coli lives for a long time, and preserves all its special characters.

I have quoted largely from the reported researches of M. Nocard because it appears to me the result of his investigations, and the conclusions at which he arrives, are strictly in accordance with the experience of myself and others

who have seen a great deal of this disease as country practitioners; and in comparing his views with those of eminent veterinarians in different countries, there seems to be a general consensus of opinion that all the main facts of a clinical character point to the contagion entering by the vulva; also, I believe at present there is no one organism that can be charged with producing the disease: indeed, the latest researches suggest that more than one organism may be responsible, and if it is found to be correct that the bacillus coli may take on pathogenic characters, it may help other investigators to arrive at a "true conclusion." One thing it certainly will impose on all who have to advise on the treatment or prevention of the disease, viz.: strict cleanliness and disinfection.

Sabat has reported the history of an infectious abortion which existed in a flock of sheep in the Department of Ande. The flock consisted of 86 sheep, housed in a narrow, low, badly-kept sheep-fold. Within three weeks 15 aborted, without any known cause. Sabat, on being consulted, prescribed isolation of diseased animals, removal of healthy ones, change of shepherd, with disinfection and sponging of vulva, etc., and the disease disappeared.

That mares are also the subjects of epizootic abortion there appears to be but little doubt. In this country, where mares (except in comparatively few places) are not kept in large numbers together, it has not been much heard of; but Dr. Fleming, in the VETERINARY JOURNAL, gives particulars of very serious outbreaks in North and South America, Australia, France, etc. It is stated that in the Mississippi Valley, in 1889-90, the losses in some places were estimated at 75 per cent.; in others one-half cast foal; and throughout the country enormous loss was sustained. In 1891 the disease appeared in South America, where similar ravages appear to have been the rule.

In the outbreak of infectious abortion amongst mares in Montana, United States of America, inoculation experiments were made with cultures from the membranes and blood of an abortive fœtus, and were successful, not only in inducing abortion, but the foal of one which lived for a short time had disease of the knee and hock joints.

I think, therefore, that we may fairly assume that the contagious or infectious abortion of the cow has its counterpart in other domestic animals.

Acting on the assumption that the disease is contagious, then comes the all-important part, how to treat, and prevent; for treatment, we must bear in mind that the disease is one affecting the uterus and genital organs generally of the mother, and the fœtus with the placental membranes. On abortion taking place, the fœtus should be at once destroyed by fire or quicklime, or boiling water; the fœtal membranes removed and similarly destroyed; the womb to be irrigated once or twice a day with a dilute solution of carbolic acid or other disinfectant; the cow to be isolated and kept away from the breeding herd and fed; the tendency being to successive abortions. If, however, the cow is particularly valuable for breeding purposes, she should still be isolated, the uterus regularly irrigated for some weeks, and she should not be put to the bull for at least three months; and when served it should not be by the bull in general use in the herd, as there is pretty conclusive evidence on record that a bull serving a cow that has suffered from contagious abortion is liable to carry the disease to any healthy cow to which he may subsequently be used, the presumption being that the contagion remains on or about the penis of the male animal.

To combat an outbreak of abortion that had become established in a herd, thorough disinfection with isolation of the diseased animals is most important. First separate the pregnant from the non-pregnant cows, keeping all those that have aborted by themselves with separate attendant, empty each shed in turn, scrape the walls and floors, close up all the ventilators, and stove with chlorine or sulphur, swill the floors and drains with boiling water, and afterwards cover

with lime, limewash the walls and, after the re-admission of stock, let the floors and drains each day be properly cleaned and disinfected, the particular disinfectant used being, I think, of less importance than thorough doing. All cows, whether pregnant or not, if admitted into the sheds, should be daily sponged with a disinfectant about the tail, vulva, thighs, etc. By some authorities syringing out the vagina with the same disinfectant is advised. With pregnant animals this causes considerable straining, and I think in them it may be dispensed with, but to non-pregnant cows it certainly should be used. The administration of carbolic acid in half-ounce doses is also recommended once or twice a week in a bran mash. Some Continental veterinary surgeons have tried the subcutaneous injection of carbolic acid, but with uncertain results, and it appears to me that that agent given in the food is the better mode of administration. All newly-purchased cows should be put in a separate building, and if possible a separate premises, and kept apart until parturition has taken place, when they can be placed amongst the healthy stock if proved to be free from disease. It must not be forgotten that to clear a premises from abortion will probably take a year or more; patience therefore as well as thoroughness is required at the hands of the owner. It has been stated that the disease will of itself die out in the course of two or three years, if no fresh cows are introduced, the idea being that the virus becomes attenuated, or, perhaps more probably, the cows become immune. Under certain conditions it might be advisable to take this into consideration; but it must also be remembered that many cows that have suffered from the disease become sterile, and the length of time lost to the owner, and the increasing age and the consequent loss of value of the cow, are likely to militate against this course being adopted.

There are various formulæ given for the purposes of disinfection and sponging; carbolic acid one to fifty of water; a strong solution of sulphate of copper; and another very effective and inexpensive mixture is:—

Soft Water	2 gallons.
Hydrarg. Bichlor.	2½ drachms.
Hydrochloric Acid	2½ ounces.

In using these agents freely, it must not be forgotten that they are poisonous, and consequently dangerous to pigs, poultry, etc.

Mr. Pound, Government Bacteriologist, from experiments made in his laboratory, has discovered that chicken-cholera exists in Brisbane. This discovery is of importance from the fact that the Rabbit Commission came to the conclusion that the disease did not exist in the Australian colonies, and reported against the microbes of chicken-cholera being made use of for the destruction of rabbits on that account.

Hydrophobia.—Since the death at Hyde recently of the boy who had gone through a course of hydrophobia treatment, yet died of the disease, there has been a big crop of remedies brought forward. The last was revealed to the House of Commons on Wednesday, September 4th, when Mr. Farrell asked the Chief Secretary for Ireland whether he is aware that Philip Movern, of Glan, county Gavan, claims to possess a specific herbal remedy for the treatment of this disease which has resulted in the cure of thousands of cases since the days of King Charles I., and whether, having regard to the necessity of doing something to cope with the increase of rabies, the Government would cause an inquiry to be made into the efficacy of this remedy, with a view to its adoption and use in some central hospital in Dublin or elsewhere? Mr. G. Balfour replied that he must maintain the same attitude of cautious reserve which, to judge from the hon. member's question, had been observed by every Irish Government from the days of Charles I.

CONTAGIOUS DISEASES ANIMALS ACT, 1894.

COMBINED SUMMARY OF RETURNS for the four weeks ending September 14th, 1895.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Anthrax.	Glanders (including Farcy).	Rabies.	Foot-and Mouth Disease.
None	Died ... 665 Slaughtered 5492 Total 6,157	Fresh Outbreaks 14 Animals Attacked 27 Died, including previous outbreaks, 32	Fresh Outbreaks 64 Horses killed 97 London, 45 outbreaks	Fresh Outbreaks 30 Dogs Killed 26 Dogs Died 4 Total ... 60 York, West Riding, 10 outbreaks	None

In Wales, of Swine Fever, 26 died, 220 slaughtered.

SCOTLAND.

None	Died ... 45 Slaughtered 318 Total ... 363	Fresh Outbreaks 2 Animal Attacked 5 Died 5	Fresh Outbreaks 5 Horses Killed 27 Lanark, 5 outbreaks	None.	None

IRELAND.

None	Died .. 92 Slaughtered 391 Total ... 483	Fresh Outbreaks 1 Animal Attacked 1	None	Dogs Killed 59 Cattle ,, 10 Swine ,, 2 Asses ,, 2 Horse ,, 1 Goats ,, 2 *Died.* Cattle 5 Horse 1 Dog 1 Total ... 83	None

Munster, 36 cases of Rabies.

Legal News.

ON 25th August, John Fudge, of Wincanton, was summoned for having unlawfully and wilfully used the name and title of veterinary practitioner.—Mr. T. D. Shaw prosecuted on behalf of the Royal College of Veterinary Surgeons, and Mr. J. T. Davies defended.—Mr. Shaw said that the prosecution was instituted by the college in order to protect the public. He handed in the authorised list of veterinary surgeons, in which the name of John Fudge was not to be found. He was instructed to emphasize the fact that the prosecution was not instituted by anyone in the district, but by the Royal College of Veterinary Surgeons. There would be a great deal of sympathy with Mr. Fudge, but if he took a little time, he would be able to qualify and practise veterinary surgery. He had not the slightest doubt of Mr. Fudge's ability to operate on the cattle of the district, but the public must be protected, and also the members of learned professions who took so much time and trouble to pass their examinations.—Inspector Greenwell, of the R.S.P.C.A., said that on March 28th, he was the prosecutor in a case of cruelty

against John Dowthy. He remembered the defendant, who was called to give evidence. He was asked by the chairman what his name was, and he replied, "John Fudge." The chairman then asked, "What are you?"—The chairman said that a great deal of importance was attached to that. He suggested that he might have said that Fudge was a veterinary surgeon.—Inspector Greenwell said that he was quite certain that those were the words, and Fudge replied that he was a veterinary practitioner. At the time witness understood that he was a registered veterinary surgeon.—The chairman said he did not recollect the occasion, but he should have imagined that after asking Fudge his name, and knowing of his experience in horses, that he (the chairman) might have said he was a veterinary practitioner. Cross-examined by Mr. Davies: He had not seen Mr. Fudge's sign-board. He had never seen any of Mr. Fudge's cards. All he knew was that he treated animals in the district.—Arthur Charles Coles, a reporter, corroborated.—Mr. J. T. Davies said that the case struck him as being somewhat of a harsh character, considering that the whole charge against his client was a statement he made in Court. He had never held himself out to the public by signs or anything else that he was a veterinary practitioner. Mr. Davies suggested that probably in answer to the chairman's second query, Mr. Fudge said that he was an unqualified veterinary practitioner, but that the last two words were the only ones heard. He could not prove that he said that, as Mr. Fudge could not go into the box, but if he did, he would not have come within the meaning of the Act of Parliament. He had not held himself out to the public as a practitioner. He ventured to say that the case did not come within the meaning of the Act, for it was, indeed, a very thin prosecution.—The chairman: It is.—If the Bench did think that the case came within the section, he had only to say that Mr. Fudge regretted that he unintentionally misled the bench.—The chairman said that the case should never have been brought into court. The evidence clearly stated that Fudge did say he was a veterinary practitioner, and he said so in a public place, for that court was a public place. He had used the title, and it had been circulated in the papers. That case should never have been brought forward, as there was no intention on the part of Mr. Fudge to deceive them or the public. He was responsible for what he said at the court, and therefore he would be fined 1s., each party to pay their own costs.

Army Veterinary Department.

The following transfers have taken place:—

Vety.-Major J. A. W. Woods, from Aldershot to Colchester.

Vety.-Lieut. G. K. Walker, from Okehampton to Woolwich.

Vety.-Major W. Gladstone accompanied 4th Hussars from Aldershot to Hounslow; Vety.-Capt. T. Marriott, 7th Dragoon Guards, Aldershot to Norwich; Vety.-Capt. R. W. Raymond, 8th Hussars, Aldershot to Leeds.

The following officers joined for duty at Aldershot on 16th inst.:—Vety.-Lieuts. T. W. Rudd, J. D. E. Holmes, and W. O. C. Dawson.

London Gazette, 3rd September, 1895.

W. O. C. Dawson, gent., to be Vety.-Lieutenant in succession to Vety.-Major Gillard, placed on temporary half-pay. Dated 4th September, 1895.

Moves and Departures.—Vety.-Capt. F. Joslen arrived at Colchester from Norwich with 1st Dragoon Guards. The undermentioned veterinary officers will embark in Transport "Victoria" at Portsmouth on the 10th inst.:—Vety.-Captn. K. Lees, Vety.-Lieuts. F. W. Shore and F. U. Carr, for a tour of service in India. Vety.-Lieut. Trydell, on return from sick leave of absence. Vety.-Lieut. W. E. Russell, for a tour of service in Egypt.

Extracts from Foreign Journals.

RUPTURE OF THE AORTA.—Professor Cadéac writing to the *Journal de Médécine Vétérinaire* says:—"Rupture of the aorta is one of the frequent terminations of all affections tending to weaken the resistance of the walls of this vessel, such as thrombosis, aneurism, atheroma, inflammation of the arteries, fatty degeneration. It takes place nearly always at the base of the aorta, about a centimètre above the sigmoid valves, on the right side, that is to say, in the pericardial sac; its dimensions may vary from 5 to 20 millimètres (5 m. = 1-fifth inch). The rupture may be circular, longitudinal or irregular; it occupies sometimes the centre of an atheromatous patch; its edges are jagged, infiltrated with blood or joined by a large clot. The causes of rupture of the aorta may be the casting and shackling of animals during surgical operations, accidental falls, violent efforts at traction, jumping, rapid running, fright, pulmonary emphysema, muscular excitement produced by certain alkaloids, anæsthetic injections of chloral. The rupture or tearing of the posterior aorta may proceed from many causes, such as, blows from without (a stroke from a pitch-fork), simple or double exostosis of the lower face of the vertebral column, verminous aneurisms, etc. Whatever be the cause that produces rupture of the aorta, the accident is always and rapidly fatal."

LONG-CONTINUED SYNCOPE CAUSED BY MIXTURE OF ANÆSTHETICS.—Writing to the same journal, M. Pécus reports as follows:—"In order to perform a surgical operation on a bull-dog, six years old, and weighing 15 kilos. (33 lbs. avoird.) I narcotised him with 4 centigrammes (6-10ths of a grain) of morphine and 15 grammes (1 gr. = 15½ grains) of chloral, as prescribed by Cadéac and Malet. The operation took 45 minutes, and during this period the patient showed no respiratory trouble due to the anæsthetic, but a quarter of an hour after it was over, and just when I was expecting the spontaneous awakening of the dog, respiration became irregular and jerky, and at last stopped altogether. I at once resorted to artificial respiration, but for a long time without any tangible result; at the end of an hour and a-half I observed slight fibrillary contractions of the muscles of the thighs; three-quarters of an hour afterwards the palpebral reflex returned. but it was only by subcutaneous injection of two milligrammes (3-100ths grain), of pilocarpine and strychnine, introduced after three hours and a-half of artificial respiration, and by regular drawing backwards and forwards of the tongue, that the reflexes of the cornea reappeared; then the dog began to stir again, to prick up his ears at the sound of his master's voice and to make efforts at inspiration. But inspiration become normal only at the fifth hour, and then the patient could stand upon his legs. He at once ran off to his master's house, distance about half a mile. He seemed to be none the worse for his five hours' syncope. This accident seems to be due to the impurity of the chloral used rather than to special sensibility to anæsthetics on the part of the dog. It is thus that operations supposed to be quite safe sometimes bring unpleasant surprises; the important thing is not to despair too quickly when one is obliged to have recourse to artificial respiration.

Notes and News.

HORSES AND THEIR FRIENDS.—There exists a mysterious sympathy which makes one animal attach itself to another of a different species, and no reasonable explanation has ever been suggested why a cat who hovers about a big training-stable, where half a hundred horses are kept, should attach itself to one animal and remain constant to it alone. This is an experience which many great racehorses have met with, not the least known to fame being

Best Man. Sometimes it is to a pony that a horse attaches itself. Robert the Devil had a friend of this description, but the great horse showed his affection rather cruelly, for he used to bite his little pal—not viciously, but hard enough, no doubt, to hurt. A pony used to nibble Bumptious' tail, which was a comically ragged affair when he first faced the starter, and showed traces of equine teeth. Silver Spur's pony was well known, and she was miserable without the little creature, being only tractable when he was with her. Much the same was the case some years ago with a mare owned by John Dawson, the elder. She had been frightened as a yearling, and was always so nervous that she could not do justice to herself on a racecourse. One day the idea of sending the pony with her to the start was hit upon. Permission to do so was obtained, the pony trotted down to the post with her, stood by her side until the flag fell, and this time the mare, supposing presumably that her friend had jumped off, galloped gaily on, and won in a canter.

Correspondence.

THE NATIONAL VETERINARY ASSOCIATION.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—May I through your columns draw the attention of the Veterinary Profession to the Table appearing on following page, which gives at a glance the position of the National Veterinary Association from its commencement up to the present time, so far as its publications give us the information.

If we compare the totals of the years 1886–89 with those of the last four years, we shall be able to arrive at a pretty correct idea of the position of the Association during these periods. We cannot include the year 1890 because it was only a special one-day meeting held under difficulties which need not here be repeated, and the first three years of the Association's existence can hardly be taken into account as the expenses of the printing during those years was extremely light, owing to the liberality of Messrs. Hazell, Watson, and Viney, through the influence of the VETERINARY JOURNAL, but the postage was excessively heavy because every member of the profession was written to and asked to join the Association and attend its meetings during those years. We must also omit this year's results as they are still incomplete.

It will be seen the printing cost a little under £40 more from 1886–89 than from 1891–94, and this can be partly accounted for by the numbers of tables and woodcuts in the papers on "The Horse-Shoeing Forge;" "Some of the fatal Diseases of the Digestive Canal of the Horse;" "Inoculation;" "Some diseases of the Foot of the Horse;" but particularly to those beautifully executed plates illustrating "Some Contagious Skin Diseases of the Horse" which alone cost over £20. However, the printing, paper and type of the proceedings of the former years I think compare very favourably, at the price, with the miserably small type and bad paper of the last four years, which is very difficult to read; and the arrangement of the 1891 proceedings was not good, with which the publication committee evidently agreed, as they went back to the old arrangement the next year. In fact, so far as the arrangement of the proceedings are concerned, nothing has been altered beyond leaving out the names of the visitors attending the meeting of 1891–92. Thus I think we may say the printing has not improved, neither is it cheaper of late years, but the proceedings have reached the members much earlier than they used to do. I also notice the printing was done in Birmingham without, I am pleased to say, any member hinting—so far as I know—that it was removed with any sinister motive as was done when it was taken for convenience and cheapness (by tender) to one of the best printing establishments in England.

Year and place of Meetings.	Printing, Woodcuts and Stationery.	Postage and Telegrams.	Reporting.	Expenses of Meeting, Hire of Rooms, etc.	Advertising.	Clerical Help to Secretary.	Travelling Expenses of Secretaries, etc.	Dinner Guests.	Experiments, Research, etc.	Total Expenditure.	Total Receipts.	Balance in Hand.	Invested.	No. of Subs. Rec'd.		No. of Pages in Proceedings.	No. of Members.	No. of attendances.		No. of New Members.	Died.	Withdrawn.	No. struck off the List for ont Paying,
														Annual.	Life.			Members.	Visitors.				
LONDON, 1883	£ s. d. 24 13 1	£ s. d. 9 10 6	£ s. d. 2 12 0	£ s. d. 3 8 6	£ s. d. 0 7 0	£ s. d.	£ s. d. 1 0 0	£ s. d.	£ s. d.	£ s. d. 41 13 7	£ s. d. 79 5 6	£ s. d. 37 11 11	£	131	2	48	175	71	20				
MANCHESTER, 1884 ..	40 2 4	12 6 9	10 10 0		10 13 0		3 8 7			77 0 4	111 15 6	72 7 10		204		90	221	96	62	54	3	5	
BIRMINGHAM, 1885	56 8 0	13 2 0	8 0 0	3 5 5	1 15 0		4 16 6			87 17 5	118 2 6	0 10 5	100	215	1	121	273	71	30	61	4	5	
EDINBURGH, 1886	96 12 8	10 1 11	10 0 0	3 17 6	7 7 7	1 0 0				129 10 8	142 2 6	13 2 3		265		169	316	68	21	53	3	7	
PETERBORO', 1887 .. .	70 18 2	7 0 10	6 0 0	9 17 6	1 2 6		2 5 3		2 2 0	99 10 0	127 19 0	41 11 3		238		140	305	57	12	21	2	11	19
NEWCASTLE, 1888	73 4 0	6 3 0	10 0 0	7 6 0	1 15 0					98 18 0	151 11 6	94 4 9		273	1	158	300	66	30	44	10	9	30
LONDON, 1889	76 13 9	5 9 3	7 7 0	6 6 0	1 11 0		4 13 6			108 5 6	125 12 6	16 8 9	100	224	1	90	285	63	18	13	2	8	18
TOTALS OF 4 YEARS, 1886-9	317 8 7	28 15 0	33 7 0	27 7 0	11 6 1	1 0 0	6 18 9		2 2 0	436 4 2	547 5 0		100	1000	2	557	1206	254	81	131	17	35	67
LONDON, 1890 . .	45 3 5	5 19 0	12 3 6	4 17 0	0 16 6	1 1 0	4 19 6			76 7 4	230 13 6	119 5 11		331		88	276	39	6	4		13	
DONCASTER, 1891	62 4 6	13 16 5	20 0 0	17 16 0	3 14 0	5 7 2	2 11 3		5 5 0	131 5 4	180 3 9	164 4 4		333		102	283	63	*	22	2	8	3
GLASGOW, 1892	70 18 6	9 10 9	16 16 0	5 5 0	5 2 0	7 14 0	3 15 0			129 3 6	128 14 8	167 15 7		232		124	291	68	*	50	5	14	20
MANCHESTER, 1893 ..	75 10 10	15 6 10	15 17 0	9 14 5	7 10 0	8 0 0	3 7 0	10 0 0		153 10 11	126 16 9	144 3 9		234		101	310	87	33	31	3	2	7
LONDON, 1894	68 17 10	11 0 0	19 7 0	5 5 0	1 3 6	3 0 0	3 8 8		13 9 6	125 14 3	139 9 5	157 18 11		241	1	143	321	90	19	29	3	6	9
TOTALS OF 4 YEARS ..	277 11 8	49 14 0	72 0 0	38 0 5	17 19 6	24 1 2	13 1 11	10 0 0	18 14 6	539 14 0	575 4 8		nil.	1040	1	470	1205	308	52	158	21	39	59
BIRMINGHAM, 1895																94	310	69	20	26	8	9	20

* Not recorded.

Formerly the postage was decidedly cheaper, as was also the reporting which I venture to say has not improved with the increase of expenditure of late years. The expense of hire of rooms and advertising have also increased, so is the Secretary's help, although I think we ought to congratulate ourselves that our worthy Secretary has not utilised all the funds placed at his disposal for this purpose. The travelling expenses have somewhat increased although this may be more apparent than real owing to some of the expenses being omitted in former years. As to the expenses of dinner guests this seems only to have increased one year. Altogether the total expenditure for 1891—94 has exceeded that from 1886—89 by over £100, whilst the receipts have only exceeded those of former years by £28. Strange to say, only 40 more subscriptions have been collected from 1891—4 than from 1886—89. Although I painfully remember the non-payments of subscriptions during the latter period was attributed by *some* to the manner they were asked for (see p. 23 and 25 of Proceedings for 1890), but the result of the last four years has softened the pang such a suggestion caused at the time.

The most astonishing statistic is that during 1886—89 there was a total of 1,206 members, and only 1,205 from 1891—4, but it is gratifying to find there were 27 more new members joined during the latter period, although four more withdrew their names and four more have died during the last four years, and it is still more gratifying to know that eight less have been struck off the list of members for non-payment of their subscriptions.

On the whole, however, the Association seems to be in a more flourishing condition of late years, because there are 34 more members in 1895 (viz., 310), than there were in 1890 (viz., 276), also these members seem to attend the general meetings better, as there have been 54 more present from 1891—94 than there were from 1886—89, but this paucity of interest due as was so tellingly alleged at the memorable meeting in London, 1889, when a member "expressed himself averse to the way Mr. Banham had conducted the business of the Society for the last year or two," and that "after seven years they ought to show a vigorous growth, and, looking at their present meeting, he could not help thinking there was something wrong, and the sooner a remedy was applied the better." Now, what was this "something wrong" at that time? Perhaps one can now dispassionately answer it: probably to the disquietude and restlessness of the profession at that time, and to the so-called "Obstructionists" being opposed by the so-called "Progressionists," who turned out to be successful in obtaining the fruits of others' work to their own aggrandisement (there is nothing like success, however obtained); but, on looking at the above table, can we say that they, with the very able assistance of an agreeable, enthusiastic, and impartial secretary (and I say this in all sincerity, as I believe he possesses all these attributes, and, what is more, knows perfectly well how and when to apply them, in fact, has "tact"), and who has tried his very best—and that is not saying a little—to improve the Association, for which we should like to see him made a Life Vice-President; but with all the good-fellowship, genuine assistance, and unity of purpose—which an outsider like myself may presume has existed during the last four or five years—we are rather astonished—perhaps more so than those "fault-finders" could possibly have been in 1889—at the little stride such efforts have made, and the small growth that has taken place in the Association since 1890; and we venture to think that even those who found fault in 1889 will now admit that the efforts of seven years previous to that period were not so very unsuccessful nor so detrimental to the welfare of the Association as they tried to make out, when everything is taken into consideration.

For instance:—Formerly

1. The difficulties we had in starting the Association and of exciting any enthusiasm except in the few.

2. The opposition and jealousy which seemed occasionally to show itself.
3. The apparent incompleteness of the rules under which we worked.
4. The state of the profession generally and the apathy which existed.
5. The apparent unpopularity of some of the subjects chosen for discussion.
6. The unfortunate friction sometimes in selecting officers and the places for holding the meetings.

Latterly:

1. The easy manner the Association, in good working order, was gained and the withdrawal of all apparent opposition.
2. The facilities afforded them for conducting the work.
3. The assistance which has been willingly rendered.
4. The popularity of the subjects chosen for discussion.
5. The respect and esteem in which the officers were held.
6. Absence of friction in the appointment of officers or in selecting places for the meetings.

And lastly, but not least of all, is the interest the profession now appears to take in its own welfare.

"*Tout le monde est sage apres coup.*"

I am, Sir, yours faithfully,

GEO. A. BANHAM, F.R.C.V.S.

September 23rd, 1895.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—I beg to enclose an advertisement which recently appeared in a Fifeshire journal. What does it mean? As far as I can judge, it means this: that a man who buys a practice should guard his interests in every possible way. Veterinary ethics, in this instance, seem to be nowhere. *Caveat Emptor.*—Yours truly,

HONOUR.

W. D. FAIRBAIRN, M.R.C.V.S.,
Veterinary Surgeon,
8, NORTH BELL STREET,
ST. ANDREWS.

NOTICE.

NOTICE IS HEREBY GIVEN,—That Mr. W. D. FAIRBAIRN, Veterinary Surgeon, who announces that he is to Commence Practice of his Profession in St. Andrews, Sold to me, at a Substantial Price, the GOODWILL of his Practice in Cupar and District, extending to St. Andrews, in October, 1892.

Cupar, 4th September, 1895. ROBT. REID, M.R.C.V.S.

EDITORIAL NOTE.

Just before going to press, we have received the Report of the Bombay Veterinary College, for the year 1894-95, which we will notice in next month's issue.

Communications, Books, Journals, etc., Received.

Annual announcement of the Ontario Veterinary College; "Cape Colony Agricultural Journal;" "Mark Lane Express;" "Veterinarian;" Annual Report of the Army Veterinary Department; Tuberculosis among Cattle, by Shumway; "Brisbane Evening Observer;" "Farming World;" "The University Correspondent;" Berliner Thierärztliche Wochenschrift; T. Spence Smith, Esq., M.R.C.V.S.; "O;" Catalogue of the Millfield-Polment Hackney Sale, October 1st.; Catalogue of The Londonderry Stud, Seaham Harbour; "Cape Colony Agricultural Journal;" "The Journal of Pathology and Bacteriology;" "The Journal of Comparative Medicine and Veterinary Archives," Philadelphia; "Land and Water" "Lancet;" "To-day;" Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); Annales de Médicine Véterinaire (Brussels); L'Echo Vétérinaire (Liége).

The Veterinary Journal

AND

Annals of Comparative Pathology.

NOVEMBER, 1895.

PROPOSED CHAIR OF PUBLIC HEALTH.

Dr. Thomas G. Nasmyth, medical officer of health for the counties of Fife and Clackmannan, contributes to the October number of the *Edinburgh Medical Journal*, an article on "The Medical Officer of Health—Past, Present, and Future." Much has been done, but a great deal remains to be done. One thing pre-eminently remains undone, and that is the founding of a Chair specially devoted to State Medicine and public health: and until this is done education in these subjects will remain as at present, in a chaotic condition. The medical student at the present times acquires the modicum of knowledge required of him regarding preventive medicine by attending about twenty lectures in connection with the class of Medical Jurisprudence, and if he wishes to further specialise his knowledge of this subject he has to wander very much after his own will amongst half-a-dozen subjects scattered over the medical science and arts courses. With the institution of a regular independent Chair of public health, a systematic course could be sketched out, embracing all the subjects required of the student who wishes to qualify himself for the public health service. After referring to the high standard of proficiency required by the different examining boards granting diplomas or degrees in sanitary science or public health, Dr. Nasmyth proceeds to deal with the future. The public health service, he states, has undoubtedly attracted the attention of a large and increasing number of medical men within the past twenty years. In 1871 four qualified in public health; in 1881, 22; in 1891 over 150. There are various reasons why there should be this increasing number. There is, first of all, the increasing number of appointments open for competition by men holding public health qualifications, by the establishment of Scottish and English Local Government Boards, and by the Burgh Police

Act for Scotland demanding that medical officers of health must be qualified in public health after 1892. Another reason, and one which demands approbation, is the desire for medical men to more fully qualify themselves for practice by acquiring knowledge of the preventive rather than the curative side of medicine. Twenty years ago one heard very little of hygienic medicine. Nowadays hygienic foods and clothing are as much vaunted as homœopathic pilules. This is a very encouraging sign of the times, as it indicates that individuals are beginning to realise that preventive medicine is a reality, and that a great many diseases and ailments are amenable to sanitary influences. Dr. Nasmyth proceeds to consider how far the education and training of the modern medical officer of health adapt him for the duties he has to perform. In conclusion, he says that the position of the medical officer meantime is most encouraging, and the recent appointment of one to share in the supervision and administration of sanitary matters in Scotland is a well-merited honour to the medical profession, and an acknowledgment of their right, in common with their legal brethren, to share in the government of the country. The sanitary well-being of individuals and communities is a matter of State concern, and it behoves the State to stimulate research in the domains of chemistry and pathology specially directed to the aims of preventive medicine. This could be done by endowing State laboratories and giving endowments for private research.

THE "FADS" AND THE FALLACIES OF SHOWS.

BY W. G. S.

It will be generally admitted that the stimulus of competition encouraged by the various societies in connection with animal shows has been the means of greatly improving the different breeds: one would not require to trace back the English race-horse, or the American trotter many generations before observing marked improvement both in appearance and speed, but while this is the case, the attention of societies and judges might be profitably drawn to useless, hurtful, and pernicious practices which are permitted in shows and, in some cases, to count as points in favour. No doubt improvements have begun in the right direction, but much still remains to be done: man is naturally a conservative animal and slow to adopt improvements. "I have always been accustomed to do it that way," is a common argument against

adopting an obviously better and cheaper method ; the English ploughman, while admitting that bearing reins are of no use in ploughing, continues to use them because he has "always been accustomed to them."

When dog-fighting was a popular sport in England, the bull terrier had his ears cropped and we continued the practice without thinking, although we know that it produces deafness. Nature gave the animal the flap of the ear as a protection when down, and to increase the collecting power of sounds when raised and man might know that he will have, as Biglow says, "to get up early," if he wants to take in nature.

Generally speaking, the faults or fallacies in judging are, when the judge forgets or ignores the purpose for which the animal is used.

A few years ago, the black-and-tan collie put other coloured brethren in the shade: his star faded, however, and that of the black and white usurped the place, and he, in turn, had to resign in favour of the sable, promoted.

While the black-and-tan was in favour it was well known that breeders crossed with the Gordon setter to get what was considered a good tan; and little reflection is needed to understand the pernicious effects of a collie, with his instinct divided between game and sheep.

A good collie is one of the most sagacious of the lower animals, but at present brain is being bred out of them to satisfy the "fad" of judges.

A gamekeeper or a shepherd will say that he likes a dog with low set ears, which is another way of saying that he likes room for brains above the ear; and yet, if one looks round a dog-show, he will find the honours given to those with least brain—a dog which would be worse than useless to a shepherd. The large round-headed collie is easily trained to work the sheep quietly, while the tendency of the ideal prize dog, with his greyhound-like thin nose and flat head, would be to see how quickly he could do the work, admitting that he could be trained to do anything. Chest, no doubt, is necessary, and "feather" is an ornament; but the primary object we have in keeping a collie should not be lost sight of, nor the means to that object systematically reduced.

One would think that it would be unnecessary to tell a ten-year old boy that sheep are used for food and clothing, that the market value is for mutton and wool; and yet it would seem necessary to remind judges at agricultural

shows of this primary and simple fact, and that they give undue favourable weight to matters of little or no importance, and in some cases to points of admitted detriment.

In black-faced sheep, a few years ago, favour was given to the one with what was then considered a good "brock," *i.e.*, to one with a white blaze between the black forehead and nose; now, given other points equal, the prize would be awarded to one with a completely black face, although it is admitted that where this is the case there is a great tendency to having black wool in the body, a point to avoid. Then, again, before a tup or ewe is sent to the show, the shepherd carefully cuts off all the wool between the eyes and horns, while he will at the same time admit that a fulness of wool on the forehead indicates a well-clad body.

With short-woolled sheep, the use of ochre or chrome to tint the wool should be prohibited, as should all artificial measures or means which are obviously meant to deceive the judge or to make the animal look better than it really is.

A fashion has recently crept on of curling the hair of Clydesdale horses for the show-yard, though it seems to be impossible to find out for what purpose. At a recent show several of the men in charge of the various horses were asked the purpose of the curling, and not one knew, and only one could give a suggestion, which was, that if a horse had a deficiency such as flatness of rib, the curling would fill up and deceive the judge. This was said without reserve, as if in shows deception was quite legitimate and common, with the inference that judges are easily imposed upon. Here, again, it should be decreed that curling is prohibited as being unnatural, and if for any purpose, that of deception.

The Hackney is made to stand as if he were about to perform a *lex naturæ*, and means are adopted to make him carry his tail what is considered "well," which might be worth the attention of the Society for the Prevention of Cruelty to Animals.

No doubt, the hackney's trained style of standing may make him look smart, but if it is sauce for the hackney goose, why not adopt it for the hunter gander? The cow was for long a martyr to one of the evils of shows. It is well known, that in order to show a good "milker," the teats were waxed up and the milk allowed to accumulate for a considerable time before the show, a practice which must have caused intense suffering. This cruelty has been put a stop to, but there is another to which the attention of judges and the above-named society might be drawn.

The breeders of the Ayrshire cow have recently discovered that nature has placed the horns of that bovine at a wrong angle, that they should be perpendicular instead of horizontal, and for the attainment of this object the calf has a rope attached to the horns, the rope going through a pulley and having a weight attached to the other end, and it is not an unknown experience for the calf to wrench a horn off in its attempts to free itself from the torture.

It may be asked "How can the judges prevent the practice?" No doubt it is first the duty of the Society alluded to, but the judges can also show that they have no preference for the angle of the horn unless it be in favour of the angle decided on by nature.

The clipping of the hair close, from the head to the shoulder, should also not be allowed, and it might all the sooner, if the judges could be brought to look on it as a reflection on their capabilities of judging. In short, whatever gives unnecessary pain, whatever is unnatural or detrimental should be considered a disqualification, and shows would be freed from phases of cruelty and absurdity.

REMOVAL OF LIPOMATOUS TUMOURS FROM THE EYES.

BY THE EDITOR.

CHESTNUT roadster stallion, four years old, admitted to the College infirmary on October 2nd. Symptoms: A tumour in each eye, situated between the membrana nictitans and surface of cornea, filling up the lachrymal fossæ, pushing the eyeballs upwards and the membrana nictitans outwards and upwards, larger part of the eyes hidden by the tumours and membrana below and by the upper eyelids above.

On examination, the eyes having been first dressed with cocaine solution, it was found that each tumour was adherent to the inner surface of the membrana nictitans, from margin to base, but presented a free surface towards the cornea.

By carefully dissecting the mass from the membrane with a fine scalpel, its base was cut with a pair of probe-pointed scissors and the whole removed, leaving the membrana nictitans intact. The near side eye was operated on first. There was a little more difficulty with the other eye there being two masses to remove; however, with a little patience, this was accomplished; the eyes were then dressed with an antiseptic lotion, the horse placed on a cooling diet and for the first four days the eyes were bathed and dressed. The inflammation

having then subsided the horse was left alone and is now perfectly well, the eyes presenting no appearance whatever of the tumours or of the operation. The horse was not cast.

On examination the troubles were found to consist of fat contained in a slightly vascular sac. Tumours, in this region, are not uncommon in the dog, but so far as my experience goes, are very rare indeed in the horse.

RUPTURED SPLEEN.

BY MR. T. BOWLAS, NEW VETERINARY COLLEGE.

WHILE assisting Mr. Craik, M.R.C.V.S., of Alnwick, I was called on August 20th last, to see a bay four-year old gelding. The animal had done its usual day's work, that of running in a milk-cart, but had refused its evening meal. On my reaching the farm, I found the cob in a stall, its head was carried very low; it seemed propped up on its four legs, it leaned forward a good deal, once or twice while I was watching, it swayed forward, and fell up against the manger; the shock seemingly brought it to consciousness again. The pulse was thready, and could not be counted, but was a very rapid one. The legs and ears were deathly cold, the mucous membranes of eye, nose and mouth absolutely white. The breathing was accelerated and shallow. There was no sweating. Feeling sure that I had a case of internal hæmorrhage to deal with, and one likely to have a fatal ending, I told the owner my prognosis. Taking the animal from the stall, we placed him in a box, and tried to administer a draught of liq. ferri perchl. and ergot. On lifting up the head, the animal appeared to swoon, and fell coming very nearly on the top of his doctors. The draught was given as he lay on the floor. On inserting my hand into the rectum, the bladder was found to be greatly distended with urine. I passed the catheter, and withdrew a large quanity of what appeared to be normal urine.

My patient was now sweating profusely, the mouth was opened at each inspiration. He died in a few hours.

Post-mortem 18 hours after.—On opening the abdominal cavity, a very large quantity of serosity escaped, and great masses of blood clots were found. The spleen had a big clot attached to its surface. On removing this, the capsule of the spleen was found to be lacerated, and a wide rugged fissure led down into the splenic pulp. The other organs were, to all appearances, quite healthy. I may say that the cob had been starved before his owner bought it (some months before), but since coming into his hands, it had been very well fed.

EVERSION OF UTERUS AND VAGINA.

BY A. J. MACDONALD.

WHILE at home during the summer vacation I was called one morning in July to see a mare belonging to Mr. Kelly, Kildorrery. On arrival I found the animal lying at the bottom of a narrow glen beside a stream. The mare was on her left side and three men were sitting on her head to keep her down. Having relieved the unfortunate patient from her human burden, I noted that she was sweating a good deal and straining almost incessantly. A large rounded tumour occupied the position of the vulva which I soon discovered to be the everted vagina, it was œdematous, very greatly swollen and inflamed. After having bathed it well I smeared it with vaseline, and with a good deal of difficulty managed to return it. Inserting my hand I found the two fore-feet of the foal in the passage, but no head was obtainable. A cord was now put on each fore-leg and traction used. On again inserting my hand and arm I found the head at the pelvic brim, pushing the two legs back the head was brought into line, and on further traction the foal slipped out bringing however along with it the uterus and vagina.

The mare was now so utterly exhausted that I had seriou thoughts of having her destroyed. At the request of the owner I proceeded to reduce the prolapsus. Having stripped the membranes from the uterus, and having washed and greased the sides of the organ, I suspended it on a sack held by two men and gently pushing in the sides of the viscus succeeded after a little while by pushing on the fundus with my closed fist to return the whole mass. After washing out the cavity with Condy's fluid and water I inserted two sutures into the labia. This was all done while the mare lay on her side; she was now utterly unable to get up, there was no straining and indeed very little signs of life. A stimulant was given and the animal propped on her side, covered with sacks and left. On going down about six hours afterwards, instead of finding the mare dead as I expected, I discovered her in the stable eating a mash. The after treatment consisted in applying carbolic oil to the vagina, there was very little discharge and not much swelling, the stitches were removed in four days, and a perfect recovery resulted.

An aged mare, the property of Mr. Fitzgerald, Kildorrery, was turned into a paddock alright at night. The next morning some men going early to a fair, discovered her with a foal at foot, and hanging below her tail a big red tumour the size of a man's head.

I was sent for and, on my arrival, found the mare standing

in a loose box, very much excited, straining almost continuously, while a man was pressing a cloth against the vulval region to prevent further protrusion. I soon found that what I had to deal with was the everted vagina. It was much darker in colour, and seemed more friable than in the former case, so that I had to use great caution in dealing with it. To prevent the straining which frustrated all my attempts to return the vagina, I put a twitch on the mare's nose, and another round the belly (by using a doubled rope and a stick), and gave one ounce of chloral dissolved in a pint of water. This quietened the animal, and I proceeded, as in my former case, to reduce the everted organ. Stitches were placed through the vulva and anodyne draughts given, and the parts were dressed with carbolic oil. Strange to say, this case, although much less serious than the other one, had not nearly so satisfactory a termination. There was great swelling, a good deal of discharge, and much constitutional disturbance, and it was nearly a fortnight before the mare was herself again.

THE SIXTH INTERNATIONAL VETERINARY CONGRESS, HELD AT BERN (SWITZERLAND), SEPTEMBER, 1895.

WE abridge the following report from the *Berliner Thierärztliche Wochenschrift*:—This congress was well attended by surgeons from all parts of the world. The central position of Switzerland and the attractions of its mountain scenery contributed doubtless to the success of the meeting. As many as 680 surgeons had intimated their intention of being present, and amongst these, apart from a great number of Swiss Surgeons, were 77 from Germany, 55 from France, 24 from Belgium, Austria-Hungary 19, Russia 12, Holland 12, Italy 11, England 4, Denmark, Sweden, Norway, Luxemburg, Spain, Portugal, India, Japan, Egypt, Greece, Bulgaria and America announced one or two each, and Roumania as many as 64, but only about a third of these, or a little more, were present at the meeting. Amongst the outstanding names we may mention Messrs. Chauveau, Nocard, Cornevin and Trasbot from France; Schmaltz, Siedamgrotzky and Müller from Germany; Schindelka and Aloys Koch from Austria; Ranpach from Russia; Bang from Denmark; Cope, MacFadyean and Fleming from England; Lanzilloti-Buonsanti from Italy; Nogueira from Portugal, and Pilavios from Greece.

As the great majority of the members present spoke either French or German, the business of the meeting was con-

ducted in these languages, but every utterance was at once rendered by a translator into the other language—French or German, as the case might be. This mode of operation is in use in the Swiss Parliament where both German and French-speaking members take part in the debates. The translation was done dexterously, and no one who could speak either language had any difficulty in following the discussions. The first meeting, which had rather a holiday aspect, was opened by Colonel Potterat, chief of the Swiss Veterinary Department, and president of the Committee of Management, who spoke in French. Thereafter Dr. Deucher, the representative of the Swiss Federal Government, addressed the meeting in German, welcoming the members to Switzerland in the name of the Government, and assuring them of the profound interest felt by the Government in veterinary affairs and the importance which they attached to the debates that were about to begin. The Congress having been thus formally constituted, Dr. Deucher, with the approbation of the meeting, vacated his chair in favour of M. Chauveau, who opened the scientific deliberations.

The first subject on the programme was "International veterinary police regulations, and how best to frame and work them." This was regarded as a subject of primary importance, and ably written papers by Hutyra (Hungary). Degive (Belgium), Berdez (Switzerland), and Perroncito (Italy), were read, but the meeting seemed to feel that the outlook was almost hopeless, as national jealousy would have to be overcome and the dislike that every country feels to having its affairs exposed to its neighbours' gaze. Then there was the question of frontier and the difficulty of keeping such questions free from political complication. Another point was emphasized by Dr. von Ranpach, who said that if, for instance, rinderpest prevailed in the Caucasus, it would be monstrous to proclaim the whole of Russia, with its enormous territory, an infected district. Dr. von Ranpach stated the interesting fact that European Russia had lost, even so late as 1885, some 700,000 head of cattle by rinderpest, and that now these losses, thanks to the measures taken for stamping out the disease, had been reduced to 2,000 a year. In the Baltic provinces no case of rinderpest had occurred since 1861, and the disease might be said to be rooted out in European Russia except in the Caucasus. In the discussion Mr. Cope took part, declaring that the English plan of total stoppage of transit was the best protection against infection. An inclination was shown by the meeting to confine its action to a petition which should be sent to the various

Governments suggesting the appointment of an international conference on Infectious Diseases, but M. Hutyra objected that the congress was itself the best conference and would get no farther forward by making such petitions. At length the following motions were carried without opposition, viz., (*a*) that an international service be established for reporting on infectious diseases and that an international bulletin for cattle-disease be published; (*b*) that a petition be presented to the Swiss Government, suggesting that it take the initiative in calling an international conference for the purpose of establishing a code of regulations for the transit of cattle.

The second meeting took place on 17th September, and dealt with the important question of mallein. Papers were read by Nocard, Schindelka, and Foth, and a lively discussion ensued; the experiences given in detail by the various speakers indicated the importance which surgeons in every country attach to the new treatment. M. Nocard led the party of the out-and-out supporters of mallein, and seemed to have with him the great bulk of his countrymen on this question. He went so far as to say that the question had been practically settled by his experiments. Foth, on the other hand, drew attention to the failures, which he thought worthy of attention. The Russian surgeons gave their experiences, from which it appeared that the use of mallein in that country—at any rate, as at present prepared—gives sometimes unsatisfactory results. Dr. Müller took the opposite view to M. Nocard, and made a not ineffectual attack on mallein, bluntly contesting its importance and supporting his arguments by statistics from Prussia. A motion was proposed by Nocard to the effect that (*a*) mallein is a powerful agent in settling the diagnosis of glanders when that disease is suspected; (*b*) the systematic administration of mallein in the case of stock affected with glanders, is the best means of stamping out the disease. After a good deal of opposition this was carried by 49 votes to 39. A resolution was then proposed by Foth, and supported by Chauveau, Leblanc, Arloing, and Müller; it was unanimously adopted by the meeting along with Nocard's motion. It was as follows: "The Governments of Europe are respectfully solicited to place means at the disposal of veterinary surgeons whereby the value of mallein injections may be finally and effectually settled. For this purpose, and to prevent all disputes, it is desirable that a number of horses be provided which shall be artificially infected with glanders, and treated with mallein." It is, indeed, highly desirable that Governments everywhere should make earnest efforts for the settlement of this

vexed question, so important to the veterinary profession and to stock owners; and this can only or best be done at official instigation and under official supervision. It is not to be expected that we shall reach absolute certainty —that would be something new in medicine—but we might at any rate, expect to get at the cause of those vexatious, failures, real or apparent, which persistently accompany the much more numerous cases of indisputable success. Much might be done with State help towards the production of pure mallein by comparing the various sorts and otherwise; the supporters of mallein can wish for nothing better than that investigation should go on, that a fair field and no favour be given to their specific.

The afternoon of the 17th was taken up with a discussion on Tuberculin. The first speaker was Professor Bang, of Copenhagen, who advocated its use, and he was opposed by Hess and Guillebean, who were sceptical, and emphasised the danger of aggravating the tuberculous symptoms and the possibility of producing miliary tuberculosis. After much discussion a resolution, proposed by Bang and seconded by Nocard, was adopted. It ran as follows: Tuberculin is a most valuable diagnostic, and may render the greatest service in the struggle against tuberculosis; there is no reason to fear an aggravation of the disease by its use, and therefore no reason to warn practitioners against its general use. A motion by Nocard was carried by 73 votes to 25, and ran as follows: The Congress expresses the wish that governments would order the administration of tuberculin in the case of herds in which tuberculosis has obtained a footing.

The third meeting took place on the 18th September under the presidency of Dr. von Raupach (Russia). The first subject was protective inoculation against "Rauschbrand," but little interest was felt in the matter and no proper discussion took place. The congress had not time to receive communications on erysipelas (red-fire) in swine and the parasites of hæmoglobinuria in sheep, promised by members. A discussion took place on swine-plagues but the decision was referred to a future sitting.

The meeting of 19th September was under the presidency of Professor Hutyra. The subject of swine-diseases was taken up again and the following motion was adopted: (*a*) The two diseases, swine plague and swine-fever ought for practical purposes to be ranked, under one name, amongst diseases to be dealt with by the state; all outbreaks of either ought to be advertised, and they ought to be distinguished in official bulletins from erysipelas due to bacillus; (*b*) The

best means of combating them must be left to the decision of the various countries, as much depends on the laws of the particular country and on local circumstances.

Veterinary-Surgeon Lorenz, of Darmstadt, then read a paper on protective inoculation against erysipelas, and after a discussion the following resolution was adopted: (*a*) Protective inoculation is an indispensable means of combating this disease; (*b*) the congress therefore directs the attention of governments to inoculation and recommends them to support efforts to introduce it, and likewise to supervise the operation and prepare statistics of the cases. Next followed a paper on rabies and inoculation therefor, but it excited very little interest and the attendance grew very thin. The reader of the paper carried a motion which was to the effect that the congress recommended all interested in experimental investigations to examine the conclusion reached by the author of the paper, and to do all in their power to forward the introduction of inoculation against rabies in the various countries of Europe.

DEATH OF LOUIS PASTEUR.

LOUIS PASTEUR died on Saturday, September 28th. If it were not still true that "the world," even now, "knows little of its greatest men," no one throughout the wide range of European civilisation would be unaffected by the announcement. As things go, Pasteur has not been neglected; it was impossible to neglect him; his investigations meant too much money to too many interests. But if his real service to mankind had been properly estimated, his death would have been recorded with greater display of universal regret than that of a Nelson or a Wellington, a Gladstone or a Bismarck. For the services of a Pasteur are services to the universal world of man, direct, immediate, immeasurable, infinite. There is not a hospital, there is not a home, where European science is at fight with disease and death, in which the contest is not affected by the labours of Pasteur. If the surgeon of to-day can save the limb that he would have had to amputate, if he can save the life which would have had to go, it is in the main due to Pasteur. If the physician can forecast and forestall the progress of the most fatal of those ills that flesh is heir to, it is due in the main to Pasteur. But it is not only in the darker days of life that every man and woman of us is reaping the results of the labours of Pasteur. If any man had only told the silk-growers of Europe how to combat the silkworm disease, he would have won a reputation. If any man

had only taught the bankrupt vine-growers of France and Germany how to re-clothe with untainted vintage the valleys of the Rhine and the hill-sides of Burgundy and Aquitaine, he would have won a reputation. If any man had only solved the hideous age-worn problem of hydrophobia, he would have won a reputation such as few know how to win. If any man had only entered our breweries and told the brewer (as he never knew before) how his beer should be brewed to the profit of himself and his customers, he would have won a reputation. If the man be a benefactor of humanity who makes two blades of grass grow where only one grew before, Pasteur was a manifold benefactor of humanity, and by giving the modern agriculturist a tenfold control of his agricultural operations, ought to have won a reputation among reputations. There is no subtlest corner or cranny of our multiform human life into which the fungus and the bacterium does not find its baneful or its beneficent way, and wherever bacterium or fungus is at work, the methods of the work have been made patent and controllable by the illuminating intellect of Louis Pasteur. When the ploughman whistles as he turns the soil, when the dairy-maid sings as she milks the cow, when the nurse and the mother look pale at each other at the breaking of the dawn that means life or death, wherever, in fact, man meets man, or man meets nature, there the meeting has been modified and ameliorated in the interests of man by this one man of the many reputations, Louis Pasteur. "If men pass away," said Pasteur himself, when he was taking part in the Tercentenary Festival of Edinburgh University, "their works remained"—and no words could be truer of himself. His works remain—like those of the summer sunshine—all-pervading, productive, beneficent; and for the most part, like all great influences, they will become day by day more unrecognisable and unrecordable because they day by day become more effective and diffused. Had Louis Pasteur been able to discover and apply some equitable system of royalties on the monetary value of his discoveries throughout the world, he would have been a millionaire among millionaires, and thrown our Goulds, and Vanderbilts, and Rothschilds into the shade. And if, by a subtler method, he had been able to tax with a scarcely perceptible percentage, the human lives he has saved or prolonged, and to add the increments to his own life, he would not only be with us still, but living as if in him at last the old dream of the inexhaustible Elixir of Life had been realised.

Proceedings of Veterinary Medical Societies, etc.

OPENING OF THE WINTER SESSION OF THE NEW VETERINARY COLLEGE.

THE opening of the New Veterinary College for the winter session took place on Wednesday, October 2nd. Councillor Hay presided, in the unavoidable absence of Bailie Sloan, who had met with an accident. There was a good gathering of students, and a considerable number of ladies, of veterinarians and agriculturists present, including, among others, Captain Appleton, A.V.D.; Captain Fenton, A.V.D.; Captain Stewart, of Westwood; Mr. Hickes, M.R.C.V.S., Market Weighton; Mr. Chambers, M.R.C.V.S., Huddersfield; Mr. Moir, M.R.C.V.S., Portobello; Mr. Spreull, F.R.C.V.S., Dundee; Mr. Bell, M.R.C.V.S., Carlisle; Mr. Clarke, F.R.C.V,S., Coupar-Angus; Mr. Boyd, F.R.C.V.S., Melrose; Messrs. Borthwick, M.R.C.V.S., Kirkliston; Hutton, F.R.C.V.S., Kelso; R. S. Gray, Southfield; Gibson, Torwoodlee; Durkie, M.R.C.V.S., Mill o' Mains, Dundee, etc. The attendance, however, was not so large as in former years, on account of the change in the hour at which the Clyde Street College was opened. In former years the opening ceremony at the Clyde Street College was always held at one o'clock, and that at the New Veterinary College at two o'clock, so that visitors had the opportunity of being present at the opening ceremony at both Colleges. This year, however, the Town Council agreed to have the opening at the College, of which they are trustees, held at two o'clock, and the effect of this innovation was that visitors were unable to be present at both functions as in former years. This appears to be a somewhat ungracious act on the part of Lord Provost M'Donald, who was last year elected Lord Provost of Edinburgh by the casting vote of Councillor Williams, the Principal of the New Veterinary College.

Councillor HAY said he had been called upon at a moment's notice to preside at that meeting in the absence of Bailie Sloan. He was there not only to represent the Edinburgh Town Council, but also for the purpose of testifying to the great respect which he had for his colleague in the Town Council, Councillor Williams. He then called upon Mr. R. Rutherford, F.R.C.V.S., Edinburgh, to deliver the introductory address.

Mr. RUTHERFORD, who was very cordially received, said that in the address he intended to deliver to them he was to confine himself to a retrospective sketch of the veterinary profession during the last forty years :—

Gentlemen,—We are met here to-day to inaugurate another year in the scholastic life of the New Veterinary College, and our friend, Principal Williams, has done me the honour of asking me to say a few words to you in lieu, or by way, of the usual introductory address. I cannot hope to do more, and am somewhat afraid that I too readily consented to do so at all. Once or twice in my life, perhaps oftener, it has fallen to me to address an audience. Generally, however, my hearers have been members of our profession, or others interested in some question affecting the well-being or health of our lower animals, never before of veterinary students, gentlemen who, judging by my occasional experience of them, are always inclined to be much more critical than their seniors. I just hope I may not be punished for my temerity.

The position, gentlemen, which I occupy is one which is usually, and I venture to think, would be more appropriately filled by a member of the college staff, who generally, in the particular branch of your studies of which he has the direction, has an abundance of new and interesting material at hand, out of which he has no difficulty in framing what is usually an interesting lecture. I am not in that position, and must confess that for the last few

weeks I have been somewhat puzzled as to what I should say, without wearying those of you who are not here for the first time, and yet possibly interest those who are. Thinking over the matter, it constantly occurred to me that you commence the study of your profession under circumstances and with advantages so superior to those which pertained when I myself first joined, that probably a sketchy retrospect of what the veterinary profession and veterinary teaching was in Scotland say 35 to 45 years ago, as compared with the present time, might not prove uninstructive. I do not myself quite date back to the latter period. What I have to say, therefore, will be only partly from my own recollections, the rest will be from what I have repeatedly heard from gentlemen who studied at that time. As you know, we have at the present time in England and Scotland four teaching institutions, but at the time I speak of there were only two, the one in Camden Town, London, and the Dick College here in Edinburgh. Later we had Professor Gamgee's School, also first established in Edinburgh, but subsequently removed to London, where, after a troubled and not over prosperous career, it terminated its comparatively short existence. In 1860, I think, Principal McCall established the institution which still flourishes under his wise and able guidance in Glasgow, and later still, making it the youngest but by no means the least, we have this institution founded by Principal Williams, founded, I hope, to remain a permanency, under circumstances which I do not think it is necessary for me to refer to to-day, further than to say that the sympathies and good wishes of the profession at large were, and still are, with him in his venture.

That the schools could be doubled, and still thrive as they have done, has, no doubt, been owing to the fact that there has been, as I venture to think there still is, an increasing appreciation by the public of the services rendered by their graduates. But in the early days, the qualified veterinary surgeon did not by any means hold the field. On the contrary, a large amount of the then available practice was in the hands of farriers, and of those who combined the double calling of farrier and blacksmith, many of whom I should just like to say in passing, were men of a very superior intelligence, and for their practical skill and ability in many instances, were much respected by those who sought their services. More, as compared with the flashy empiric, too common even at the present time, they were, I think, a superior, a better informed, and more useful class of men. It was, in my student days, very much the custom of the budding, and too frequently, also, of the already qualified practitioner, to speak of them contemptuously. They were all classed alike, they were said to be ignorant, and their methods were said to be barbarous. Well, perhaps they were, some of them, but although I have recollections of some who were neither, was it not lost sight of that the men themselves were, after all, not so very much to blame, that, in fact, they just represented the condition, may I say the art, of medicine at that time, as applied to the lower animals, and as handed on to them; and that they followed its practice often very successfully, mind you, just according to their light, and as the result, frequently, of close and intelligently applied observation. Still, further, was it not forgotten that posterity, with its always advancing greater knowledge, might possibly have as much to say of their detractors, even, as it may say of us of the present day? Who knows?

To displace and replace these old practitioners with duly qualified ones, was the aim and purpose of the schools, and, no doubt, the desire for this arose from the very praiseworthy feeling or conviction that the time had come when the attendant on a sick animal should possess some qualification, should have had some scientific training akin to that of the gentleman who ministered to the ailments of its owner. I have frequently, however, heard that this was in many instances a very difficult thing to do, and that too frequently it was

an exceedingly uphill job to bring about a recognition of the fact that, all things considered, the college-bred should be superior to the home-bred practitioner, or, in other and plainer words, that in general practice the former was even as good a man as the latter, for you must remember that then, as now, the public could only judge us by our work.

I daresay in some cases, but not so very many, as was said, there was room for some difference of opinion on the subject, and looking back now to some of the education of the time, I do not think that such was very much to be wondered at. I do not wish to alarm you freshmen, but compared with what the student of the present day has to get up and go through with, I must confess that even we of my period, 35 years ago, had an easy time of it. Two sessions of six months each, a series of lectures on chemistry, anatomy, very elementary physiology and horse and cattle pathology so called, not much you will say compared with what you have to face and acquire a knowledge of, less when I tell you that the second session's work was in my recollection just an almost word-for-word repetition of the first's. It could not be otherwise as all the students sat together—the only difference between what was called the senior and the junior class being that the former at all lectures had a sort of prescriptive right to occupy the front benches. Botany, if thought of, was not taught, bacteriology was unborn, and the microscope in its very occasional introduction was only in what it revealed, interesting to comparatively few of us, and not as it is now, a compulsory and charming study, and most valuable accomplishment of a majority. The examination, however, in those days was a very stiff one, excuse the phrase, if we did not have so many subjects to get up as you have now what we did have, had to be passed in one go. The examining board so far as the status professionally of its members was concerned was a very high-class one, and the penalty for failing to satisfy them, relegation always to another year's study. You are privileged to present yourselves for examination in sections of your studies, but it is just open to argument whether the system is not being overdone. I think it is somewhat, for while I agree that with so many subjects to get up, it would be impossible to revert to a system which would require you as it did us to get up all your work for one examination, I do think we would have harder headed men in the end if we had fewer examinations. There seems to be always a percentage of men who have brain capacity only for one or two subjects at a time. I question if, in these days, when the best only can hope to succeed, most of such men are not wasting their time. You, of course, will not agree with that, I do not expect you to, nevertheless I may be permitted to say, that in my judgment the present system is one that I consider as passing made easy, and whether it is to be an ultimate advantage time will demonstrate. There can be no doubt, gentlemen, that the collegiate instruction of early days, suffers by comparison with that of the present. I presume it was in the main found to be sufficient for the times, and yet it has often been a marvel to me, as doubtless it has to others, that nevertheless, and within a few years of each other, so many brilliant veterinarians were turned out. Why! speaking of the Scotch schools alone some of the past and many of the present and most distinguished teachers, many of the most eminent practitioners, civil and military, were graduates of the period I refer to. Never before, never since in the history of veterinary progress in this country has such a cluster of well-known names, come so close upon each other's heels. Let us mention just a few. Mr. Barlow, a most amiable and accomplished gentleman, whose too early death was one of the first great losses the profession experienced. Drs. George Balfour and Allan Dalzell—who among us that ever listened to the latter will ever forget him, Finlay Dun, one of your present, I think the oldest, and probably the most esteemed among your examiners, and the author of the best text-book on veterinary therapeutics

in the English language, Colonel Hallen and General Sir Fred Fitzwygram, Dr. George Fleming the late, and Colonel Lambert, the present Director-General of the Army Veterinary Department, our good friend Professor Duguid and Professor Law, the late Professor Strangeways and Principal Robertson, our friends Principal McCall and Principal Williams and still later Principals Andrew Smith and McEachran, both of whom were fellow-students with myself, and both of whom, I feel proud to say, are now at the head of the teaching institutions which they each established in the dominion of Canada, and a host of others to mention any one of which in preference to another would be invidious, and exceedingly ungraceful on my part.

It has been somewhere said that when in a nation's history some great crisis arises, individuals come to the front of whom it may be said that they had been created for the emergency, so in this profession of ours it would almost seem, that just at the time when it was struggling into a front place and seeking to establish itself as a factor in the history of the country's progress, these men were born to captain it to success. In no branch of science has there been greater onward strides than in that of medicine, and that veterinary medicine occupies the high position and commands the respect which it does at the present day, is due not only to the labours of those I have mentioned, but to the fact that we have in our ranks a large number of men, who no matter what their early training was, have never ceased to be students, workers in that apparently inexhaustible field of study, which seeks to explain and prevent, quite as much as how possibly to cure disease.

Referring to the necessity for this, the late Professor John Gamgee in an address delivered to his class in 1857 said, "the science of comparative pathology in its present incomplete form may be based on the rumour and scattered observations of men of all kinds, but its future development must be entrusted and indeed will be effected by those who can take comprehensive and philosophical views on medical questions."

Gentlemen, when John Gamgee uttered those to be prophetic words, which indeed were a prelude to the note of alarm he sounded, not for the first time, in the interests of animal economy, it was not the first time he had—and in this so far as I know he stood alone among veterinarians—pointed out how the flocks and herds of the country were then annually decimated by diseases, the etiology of which, as we now know, was not only not understood, but which were not without violent prejudice inquired into. He had already predicted that in the then total absence of precautionary measures—that Rinderpest, that ever present although occasionally dormant scourge of eastern countries, was almost certain to be introduced here; and he also saw and pointed out, thus early in our history, that those two scourges, foot-and-mouth and pleuro-pneumonia could also be combated by measures, other than those then employed. Disease was rife, it was everywhere, and mostly always. But whatever men's thoughts were, no concerted action was taken for its suppression; it unhappily had not, except in a very limited degree, become recognised that much of it was contagious, that it spread owing to the entire neglect of the most elementary precautions, and that it was mostly preventable.

It may occur to you to ask, whose fault was that, where was the veterinary profession? Well, gentlemen, as far as Scotland was concerned, Barlow being dead and Gamgee not listened to, it was nowhere. The traditions of the teaching of the period had still too great a hold over the perceptions of the average veterinary surgeon, to permit him to see their absurdities. Men follow their leaders; at that time there were practically in Scotland, only two —one who recognised the possibilities and presence of contagion, the other who was most relied upon, but as it turned out unfortunately so, who denied their existence. I was a student of the latter's, and with the exception

possibly of glanders, I do not recollect that we were ever taught that any single disease was contagious, that they were communicable between animal and animal, and that some of them were communicable from animal to man. Notably that rabies—the most certainly fatal disease communicable, was contagious at all, was scouted as preposterous, and a few little anecdotes used to be told in support of the dogmatism. Speaking from my own experience I am prepared to, and do assert, that it would have been much better for us, had we in the case of many diseases been left, or recommended to arrive at conclusious regarding them just from our own individual observations. But no, we might think what we like, but to express in the slightest degree any opinion opposed to what we were taught was an almost unpardonable, and frequently a not forgotten heresy of the worst kind. Well do I recollect the dressing down which I got from that otherwise illustrious teacher, Mr. Dick, when in all the innocence and candour of youthful but probably too ardent studentship, I said to him that there was something in the constant recurrence of pleuro-pneumonia in certain byres which to my mind suggested contagion as the cause.

As an old student of Professor Dick, one who received many benefits at his hands, I will allow no one to outstrip me in my admiration for him in very many ways. We owe him a never-to-be-sufficiently-paid debt for being the founder of the first veterinary institution in Scotland, and in this for being practically the founder of many of our fortunes. He was a wonderful diagnoser of the seat of lameness in horses, and teacher of its causes and treatment, a faculty which he seems to have transmitted to many of his students. He taught us what professional integrity and firmness of opinion was, and set us a constant example of untiring energy and devotion to the routine of clinical and other professional work. He constantly impressed upon us the necessity of thinking for ourselves, but, with a strange contrariness, only so long as our conclusions were not at variance with his, for he could never, in my recollection, listen with that patience which is a characteristic of the teacher nowadays to the expression of our thoughts without firmly putting us down if what we ventured to say in the least degree implied that there might be a possible doubt as to the absolute correctness of his views. He was a man of iron, the Bismarck of the profession at that time. Gamgee, his rival, was his very antithesis, and it must have been a bitter pill for the older man to swallow to acknowledge that the younger, as regards the contagious diseases, was right, and that he was wrong. Influenza and strangles in horses, anthrax, foot-and-mouth, pleuro, and rinderpest in cattle, distemper and rabies in the dog were none of them regarded as contagious. We were taught that what produced a case in one animal was responsible for its occurrence in others. Quite so, only not as we now understand how and why some diseases spread. When left to themselves, pleuro-pneumonia, for example, was said to be one of those epizootics which depended upon atmospherical influence for its occurrence, and it was said there were examples of a similar nature in the vegetable kingdom, and that the notion that it arose from infection had given rise to the most extravagant proceedings for its suppression. What do you think of that?

Gentlemen, I think you will have gathered from what I have told you that while we in those days, as in the present, had, no doubt, much to learn, many of us subsequently, and that, too, very speedily, found that we had much more to unlearn—often a more difficult task to accomplish than the first. It was no fault of our teachers if we were not good anatomists. Indeed, I do not think that the subject is either taught or got up any better now than it was then. The principles and practice of shoeing, clinical medicine and surgery—the former very much, such as it was—bleeding, blistering, and physicking were daily largely in evidence. But of pathology, that branch of medical

science now so much to the front, and on a knowledge and due appreciation of which so much of the successful practice of medicine depends, as then taught—well, perhaps the less said the better. I congratulate you, gentlemen, however, on the very different conditions, in this respect, under which you will prosecute your studies.

And now let me say a few words about what I daresay some of you will think is of more importance. You are seeking to enter our profession at a time when many of those already in it are disposed to think, nay, go as far as to say it, that it has seen its best days; that it is now, from a purely monetary value point of view, at a standstill, and that any movement in it now is just as likely to be backward as forward. The cause assigned is overcrowding, and a necessary greater and keener competition for practice lowering its earning power.

I cannot say that I entirely share that opinion, and I counsel you not to pay *too* much attention to it. No doubt we have become of late years somewhat overcrowded—what profession has not?—and, as a result, there is unhealthy competition where, in many cases, there was formerly no necessity for anything of the kind. Unfortunately also we are considerably shut out now from our colonial dependencies and other countries, where formerly a good number of our graduates went. India, Canada, the States, and Australia are now abundantly supplied with the home-made veterinary surgeon, trained in and turned out from their own schools, and naturally expectant, and likely to receive, where deserving of it, a large measure of preferential support. We cannot expect that, perhaps, so many of our men will in the future do so well in those countries as some have done; but there, as here, they will, no doubt, have their share of what is going, and it will remain for us to be thankful if they, who being educated abroad, do not ultimately seek to find a field for their labours here—more, I for one, would not be surprised, if I live long enough, to hear of our colonial brethren, at any rate, claiming by way of reciprocity, to have a right to do so. So far as we are concerned at present we may console ourselves with the knowledge that the world has not ceased to grow; that new fields are opening out; that a long period of trade depression seems to be passing away; and so long as that is the case I am not going to believe that there is likely to be less need for our services than there has been hitherto. As a matter of fact, I do not see that in the great cities and towns we are in any less demand; nor do I think that electricity, or any other new motor, is anything more than a bogey. When railways superseded the old stage coaches, the destruction of every business in which horses were an essential was foretold. Well, did the croakings of the prophets come to pass? No; on the contrary, the number and uses to which horses were put so much increased that they rose immensely in value, a circumstance which alone, of itself, rendered their health a matter of serious consideration, and necessarily brought our services more largely into requisition. I grant you, however, that the average country practitioner, much of whose work lies among cattle, must have had his income somewhat seriously impaired by the operations of the Contagious Diseases Animals Acts, as recently applied. Some of us in the towns have felt it a little, too. The diseases scheduled in the Act have, some of them, been practically wiped out—they don't exist now to be a source of revenue to anybody. You will hear of them, but it is more than doubtful if in this country you will ever again see much of them. The goose has been killed that laid, for many, a very nice little golden egg. The doctors have the pull over us there. They don't stamp out their diseases, their subjects, and their living. *We* wouldn't enjoy the prospect if they did.

In connection with the working of the Contagious Diseases Animals Acts, I do not think our profession has been well treated; on the contrary, we have been and are being treated shamefully. To us this country owes its present

freedom from certain contagious maladies. What has been our reward?—paid in coin of the realm for services rendered; dropped when we no longer appeared to be a necessity. Every post in the gift of the Board of Agriculture, to their shame be it said, has been given to, and there is a consensus of opinion is misfilled, by a staff whose previous calling was either that of a gentleman at large, or of so heterogeneous a kind that I imagine, in appointing them, the authorities must have had in view the probability of their ultimate absorption into other state departments. Years ago I saw a signboard over an establishment in Melbourne—possibly our friend the principal has seen it also—setting forth that the place was run by "Johnnie Allsorts." "Odd name," I remarked to a friend. "Yes," he said, in reply, "but not so very inappropriate you will admit, when I tell you that man not only deals in any blessed thing, but there is no profession he isn't prepared to take a hand in, if a case comes along." I am afraid Johnnie's kind is not confined to Melbourne. Joking apart, however, the gentlemen I refer to have no right to be where they are, just about as much as we have to the naval, civil, or combatant sections of the army services. A pretty muddle we would make of it if we were there, but not more comparatively than our friends of the animals department are making at present in their methods of suppressing swine fever. Whether or not the animals department will be entirely officered by members of our profession, none of us outside the charmed circle of Whitehall Place can tell; but in asking for such to be the case, we ask for no more than we are justly and abundantly entitled to. Not only because we have a big claim on the gratitude of the country, but because the peculiar nature of the service is one for which, by previous training, we are, best of all others, specially fitted for.

Efficiency for the service should be the first consideration in making the appointments to it—that, at any rate, seems a common-sense argument; but I am afraid influence and vested rights, if there is to be a fight over the question, will die hard. The immense possibilities arising from the discoveries being made of the specific causes of many diseases, seems to me to point to this—that in the near future the practice of preventive medicine will play an important rôle, and in this connection there is a new and very extensive field of work for our profession, providing we satisfy the public that we are fitting ourselves for it. I rejoice at this, for I have ever been a constant opponent of stamping out by the pole-axe. I admit, of course, that this method has cleared this country of pleuro; but I have yet to be convinced that such an extreme measure was not only necessary, but was the only weapon at hand for dealing with this disease. Its advocates do not seem to be in a mighty hurry to put their method in force, where I hold it is more required. I am not aware that pleuro pneumonia ever cost us the life of a single individual: how many, I would ask, does tuberculosis cost us annually? You are aware that efforts have been made, although without success, to have this horrible disease scheduled and dealt with as a contagious one. Something undoubtedly requires to be done. It is the one outstanding disease of the lower animals communicable to others, and in the form of our daily food to the human race, and, from all I can learn, the one disease which, while known to be largely preventable, is allowed to claim its yearly holocaust of victims. One precaution seems to me to be imperatively demanded: the experimental work of Professor McFadyean and others is sufficiently conclusive to establish the value of the tuberculin test in discovering affected animals. Why, then, should the authorities hesitate to enforce, or owners of dairy stock of their own accord adopt the method, and so ensure to consumers a healthy milk supply to begin with. As a corollary to such the question naturally comes up, What is to be done with the diseased? Pole-axe them, I say, there is good grounds for it in such a case; and as this would be done in the interest of

public health, let the public purse indemnify the owner. At present the owners of dairies have to be licensed: this is a sort of guarantee that their premises and utensils are clean. Rules are in force to guard against the transmission of typhoid and other diseases through the medium of milk, and rightly so; but it is just as necessary for the public to be as far as possible guaranteed that the original producer is also healthy. This can now be done, should be done. Let us work together to the end of seeing it done, or the ubiquitous officer of health will be there before us.

And now, gentlemen, I must draw these desultory remarks to a close. I know that my friend Principal Williams will, as usual, have something to say to you; and I feel that I have already occupied too much of your time and of the afternoon's proceedings. Your aim and purpose, gentlemen, I take it, is to become members of an honourable and, next to the medical, of a noble profession. I know of no higher mission, none certainly more gratifying to the lover of animals, than to minister to their sufferings. Our faithful servants in health they deserve our every care under disease. The way to graduation is now much lèngthened and possibly a little more difficult; but there is this to be said, here you will find, here you will get, not only all the scientific training the Royal College of Veterinary Surgeons requires of you before awarding you its diploma, but from the College staff you will, I am sure, receive every personal assistance, every help in the little difficulties which are sure to arise in the prosecution of your studies. The profession is not a bed of roses, neither is the way leading into it. I have told you, gentlemen, that the profession is somewhat over-crowded; let me, therefore, impress upon you the absolute necessity there is for you making yourselves the best who enter it. The good men will always, sooner or later, come to the front; and in spite of pessimistic utterances to the contrary, be assured there will always be room for them. Let the bad and indifferent ones come from where they may, I hope I may say of you that there will be as few as possible from here. Keep your eyes and your ears open, in your class rooms you will receive the scientific groundwork; but it is in the yard, the stable, the forge, the byre, and the field that you will have to learn from close observation the many things which go to make up the superstructure of a good clinician, of a successful veterinarian. Do not consider any work beneath you. I counsel you to devote all the time you can to clinical work, to what you might consider the most unimportant items, to the handling of, and acquiring a knowledge of, the habits and appearances of animals in health, to close observation of the appearance, gait, and other symptoms under lameness, and the various ailments which you will have opportunity of seeing. Do not neglect the forge; learn to use, if you can, every tool or instrument used by the shoeing smith; he who can do so, I can assure you from experience, is in a very different position from him who cannot. I need not tell you why, further than that I am afraid that in foot cases a large number of young veterinary surgeons do not exhibit the readiness to recognise, nor the ability to deal with, that should be expected of them. This is just because they won't take the trouble to become practically at home with the foot. You are apt to think it "work for the smith." Don't do so, lest you find yourselves in many places, and, as a result, it may be of an actual superiority, superseded by that new creation—the registered shoeing smith. In your studies be diligent; it is the one way in which, in a sense, you can repay those who send you here. Let your conduct be that of gentlemen; cultivate good comradeship. They say all work and no play makes Jack a dull boy. Very well, let it be work with some play—not play and some work; and let the aim of each one of you be that of the whole school, to uphold and raise its lustre as your *Alma Mater*. In conclusion, gentlemen, let me wish you enthusiasm and good health to carry out the work upon which you have entered to-day, success in your examinations, and finally a prosperous, honoured, and happy long life in the future.

On resuming his seat he was loudly applauded.

On the motion of Principal WILLIAMS, seconded by Captain FENTON, A.V.D., a cordial vote of thanks was awarded to Mr. Rutherford for his address, and the proceedings terminated with a cordial vote of thanks to the chairman.

ROYAL COLLEGE OF VETERINARY SURGEONS.

A QUARTERLY meeting of the council was held on Friday, the 4th inst., at 10, Red Lion Square, Mr. J. F. Simpson, President, in the chair. The members present were :—Gen. Sir Frederick FitzWygram, Professors Dewar, Edgar, McFadyean, Penberthy, Pritchard, Shave, and W. O. Williams, Messrs. Abson, Beddard, Bower, Dollar, Elphick, Faulkner, Fraser, Hunter, Hunting, Kidd, Lambert, Lawson, Locke, Mason, Mulvey, Peele, Trigger, and Wragg; Mr. Thatcher (solicitor), and Mr. A. W. Hill (Secretary).

The SECRETARY read the notice convening the meeting.

On the motion of Mr. FRAZER, seconded by Mr. LAWSON, the minutes of the previous meeting were taken as read and confirmed.

Absentees..

The SECRETARY said that he had received letters from Messrs. Thompson, Hartley, and Barrett, regretting their inability to attend the meeting.

Correspondence.

The SECRETARY said that a letter had been addressed to the Council by a gentleman who was the holder of diplomas from the Royal Danish Veterinary College asking him if those diplomas entitled him to registration in England. The Council, he said, had not granted anything of the kind up to the present, nor were there any regulations or bye-laws allowing them to do so.

On the motion of Mr. MULVEY, seconded by Professor EDGAR, it was resolved that the usual letter be written to the applicant.

The SECRETARY stated that Mr. Hamilton had applied six months ago for recognition and obtainment of the diploma of the R.C.V.S. by virtue of his holding the Highland Agricultural Society's certificate. Professor Williams, at a previous meeting of the Council, had said that he should not be satisfied unless he had letters of identity proving that this Mr. Hamilton was the same gentleman who had passed his college at such and such a date. He (the Secretary) had now received the required certificate from Mr. Hamilton, signed by magistrates and two or three members of the profession who knew him to be the same person.

On the motion of Mr. MULVEY, seconded by Mr. ABSON, it was resolved that a diploma, duly signed by the President, be forwarded to Mr. Hamilton, he having furnished the proper guarantees.

The SECRETARY read a letter from Mr. Baxter acknowledging the receipt of a cheque for £50 as a donation to the scheme of the National Registration of Farriers and Shoeing Smiths, enclosing a copy of the following resolution which was unanimously passed at the meeting of the committee of that body :—"That the best thanks of this committee be given to the R.C.V.S. for their liberal donation of £50 towards the funds for carrying on the Registration scheme, and that the Secretary be instructed to write to the Council of the College expressing the great pleasure the Committee feel at the continued interest taken by the College in the scheme which, the Committee are more than ever convinced, cannot fail to be of immense advantage to the trade."

The SECRETARY read a letter from Mr. Peter Moir, on behalf of the

Scottish Metropolitan Veterinary Medical Society, enclosing the following petition :—"The President and members of the above Society, which numbers on its roll many of the leading veterinarians in Scotland, are of opinion that the rapid and alarming spread during late years of bovine tuberculosis among the cattle generally, and the dairy stock in particular, of Great Britain and Ireland, cannot but be regarded in the light of a great national danger, and the stringent measures to prevent the extension of this dangerous and insidious disease are urgently necessary and should at once be entered upon. They therefore respectfully request the influence and aid of the President and Council of the R.C.V.S., and to bring these indisputable facts and the opinions formed thereon to the notice of the Minister of Agriculture. Further, that the Royal Commission formed to investigate this disease, in relation to its danger to human life, had some months ago submitted their conclusions to the Government that tuberculosis was prevalent in cattle, including dairy stock, and was communicable to mankind through the consumption as food, of their milk and flesh ; and this Society regrets so grave a state of matters should continue to exist, unheeded by the Government. It is, moreover, their opinion, (1) That bovine tuberculosis should be scheduled in the Contagious Diseases Act of 1894. (2) That all dairy cows should be placed under veterinary supervision. (3) That among all suspected herds and dairy stock the use of diagnostic test 'tuberculin,' under scientific supervision should be made compulsory. The co-operation and support of sister societies in the veterinary profession have been earnestly requested, as the Scottish Metropolitan Veterinary Medical Society considers that a duty is devolved upon the whole profession to combine to strengthen the cry to the Government for the adoption of measures whereby bovine tuberculosis in this country may be checked and ultimately extirpated. It would, in conclusion, further point out for the consideration of the Government, that the longer the delay the greater the difficulties and the attendant expense to cope with the disease that will inevitably follow."

The SECRETARY also read a letter from Mr. W. Awde on behalf of the South Durham and North Yorkshire Veterinary Medical Association dealing with the same matter.

Mr. TRIGGER : I think we all recognise the importance of the subject which these societies have laid before us in their letters. They are subjects that must certainly be dealt with at a later date, but it would be quite impossible to take up so gigantic a matter to-day. I would therefore suggest that the letters be referred to a sub-committee to consider the matter, and to advise the Council as to what they consider the best steps to take.

Professor MCFADYEAN : I should like to raise the question whether it is the serious intention on the part of this Council to begin the consideration of such questions as this. Nobody can deny that it is a very important question, but there are many other important questions of a like kind, and if we are to be constantly asked to deliberate upon these legislative measures, I am afraid that it will seriously hamper the proper business we have to carry out. The document which has been read is rather strongly worded. It is very easy to call a fact "indisputable," but I should be inclined to dispute some of the things which are called facts in it. It conveys the impression that the Special Committee of the Royal Commission which investigated this question gave a report to the effect that this was a serious danger to human life. I have carefully read the report more than once, and I maintain that it rather conveys the opposite impression, that the members of that Commission express the opinion that there was comparatively little danger from the use of tuberculous carcases, and that a large portion of the danger to human beings in connection with the sale of tuberculous flesh was from the contamination outside—from butchers' knives used in cutting tuberculous lesions

Mr. HUNTING: I should like to say that although we have only had the opinion of two veterinary medical societies the subject has been discussed at others, and they have expressed very similar ideas. As has already been said, it is a question which must soon come before the British public, and if we lag behind and take no interest in the matter we shall be left out in the cold. I think, not only in deference to these societies, but in deference to the general opinion of the veterinary profession, a committee should be appointed to consider the matter and do the best they can. I beg to submit that proposition.

This was agreed to, and on the motion of Mr. TRIGGER, seconded by Mr. LAWSON, the following gentlemen were appointed to act on the committee: The President, Mr. Hunting, Mr. Mulvey, Mr. Kidd, Prof. Edgar, Mr. Abson, Prof. Pritchard, Prof. Penberthy, Prof. McFadyean, Mr. Mason, and Prof. W. O. Williams.

The SECRETARY read a letter from Mr. Maurice F. Linch, of Tipperary.

On the motion of Mr. HUNTING, seconded by Mr. FRASER, it was resolved that this correspondence be sent to the Board of Agriculture.

The PRESIDENT: I ought perhaps to report to the Council that an invitation to attend the Veterinary Congress at Berne reached me only forty-eight hours before the Congress met. That, I need hardly say, gave no time to call the Council together in order that they might select a delegate to send to Berne, and in consequence the R.C.V.S. was not represented. I believe that the failure to send an invitation to the College earlier was due to some misunderstanding; but, finding that the Royal College was not included in the invitations I, as your President, thought it right to investigate the matter, in order that on other occasions we might not be left out.

Presentations.

The SECRETARY announced the following presentations:—"The Journal of Comparative Pathology," by the editor, Prof. McFadyean; the Annual Report of the Board of Cattle Commissioners, by Dr. Osgood in America; a bound volume of *The Veterinary Record* by the editor, Mr. Hunting; the Annual Statistical and General Report of the Army Veterinary Department by the Chief Officer of the Army Veterinary Department, Colonel Lambert; a set of parturition instruments, minus the crutch, for the Museum or for use at examination, by Mr. Thompson.

On the motion of Mr. FAULKNER, seconded by Mr. KIDD, a vote was accorded to the donors.

Appointment of Treasurer.

On the motion of Mr. KIDD, seconded by Mr. MULVEY, Mr. F. W. Wragg was unanimously re-elected as Treasurer.

Appointment of Secretary to the Scottish Section of the Board of Examiners.

The PRESIDENT: As you are aware some time ago Mr. Rutherford resigned his position as Secretary for Scotland. It was really unnecessary that any letter of resignation should be sent because every officer has to be elected annually. At the present time we are without a secretary for Scotland, and I should be glad to receive nominations.

Prof. MCFADYEAN: Might I suggest, whether, seeing that the late Secretary has resigned, it might not be advisable to advertise the office? I quite understand that it is not obligatory to advertise, but still, it might be wise and expedient to do so.

Mr. FAULKNER: Has it been customary of late years to advertise for a gentleman to fill this position?

The PRESIDENT: I believe on the last occasion we did advertise.

Prof. McFadyean: I shall move that the office of Secretary of the Board of Examiners in Scotland be advertised for; and the remuneration to be 60 guineas per annum.

Mr. Hunting seconded the motion, which was agreed to.

The President: As a special meeting will be necessary we had better proceed to fix a date now.

On the motion of Mr. Trigger, seconded by Mr. Mulvey, it was resolved that a special meeting be held within the first ten days of November, at the discretion of the President.

Registration Committee.

The Secretary read the report of the Registration Committee, from which it appeared that a large number of members had been cautioned with regard to advertising and in nearly every instance had at once given undertakings to discontinue. The committee had been considering the case of chemists using the words "Veterinary Chemists" and selling veterinary preparations; they had selected a test case which was in the hands of the solicitor for the purpose of obtaining such evidence as would lead to the conviction should a prosecution be instituted. The committee had also before them cases of several persons using the words "Veterinary Forge." Cautioning notices had been given in each instance, and in most cases had been complied with. There had been several complaints with regard to persons using the words "Veterinary Surgeons," or words of a like nature, and the committee had instructed the solicitor to investigate the complaints, and should he consider the evidence sufficient, to apply for leave to prosecute. The committee also had before them the applications of Mr. Joseph Colthurst Thompson and Mr. Geo. Garnett, for the restoration of their names to the Register, which had both been struck off according to sub-section 4, section 5, of the Act. Satisfactory reason, duly authenticated, had been given in both instances, and the committee recommended the restoration of their names to the Register.

On the motion of Mr. Trigger, seconded by Professor Pritchard, the report of the Registration Committee was adopted, and there being a full *quorum* present the seals were affixed to the authorities for the various prosecutions.

Election of Auditors.

On the motion of Prof. Pritchard, seconded by Mr. Wragg, Messrs. Woodger and Warner were re-elected as auditors.

Examination Committee.

The Secretary read the report of the Examination Committee, which stated that by the instruction of the Council letters were sent to those examiners whose reports and letters needed some explanation, and satisfactory replies had been received from the Chairmen of the different sections, and assurance received by the Committee that in future the "markings" at the tables (A and B) would be conducted according to the wishes of the Council. The Committee recommended that the Chairman of Class B be informed that only two students were to be examined at a time, and that copies of the resolution be sent to the Chairman of this class, and also to the Secretary of the Board of Examiners in Scotland. The Committee regretted that some friction had occurred at the last examination, and that letters of complaint had been sent to the Council, and recommended the Council to let the matter drop. The Secretary reported that he had written to Dr. Sims-Woodhead in regard to the microscopic specimens which had been suggested as a useful addition to the examination (Class C oral morbid anatomy), and he promised to write to Mr. Cox, the chairman of the section, as to what specimens he considered would be advisable to obtain. At a subsequent meeting the

Committee had met to consider the letter from Dr. Sims-Woodhead in regard to specimens for the pathological table, and recommended the Council to request the Secretary to inform the examiners in pathology that it was their desire that students should be examined on pathological specimens furnished by their teachers, and that when the specimens sent by any teachers were considered inadequate, supplementary specimens should be provided by the examiners.

The PRESIDENT: The Examination Committee at their meeting on the 1st August passed a resolution recommending to the Council that the matter with regard to the unfortunate misunderstanding between the examiners and the secretary should drop—they also intended that the secretary should write and ask gentlemen concerned if they would assent to this course. Unfortunately, the secretary misunderstood his instructions and interpreted the resolution as carried to mean that it be also a recommendation to the Council that the Council should instruct the secretary to write and ask the gentlemen if they assented to the course. I point that out because it is evident that a mistake has been made. It has now been corrected in the report, but without the explanation I have given it may seem strange that no replies had been received from these gentlemen.

Mr. MULVEY moved and Mr. Abson seconded the adoption of the Report.

Mr. HUNTING: There was a resolution adopted by the Committee yesterday which is embodied in that report, and which I wish to ask the Council not to adopt until we thoroughly understand it. You will remember that a letter was received from Dr. Woodhead and that the secretary had replied, and that Dr. Woodhead had said that he would write to Mr. Cox stating what specimens he desired. Now that remark of Dr. Woodhead shows that he is under the idea that this College is going to supply its own microscopical specimens in future, as they supply all other specimens that they are able to obtain. In one of our bye-laws it says that examiners should report after every examination on everything with which they are satisfied, and should give a general idea of the result of the examinations and what they thought of them. We have asked the examiners to report, we demand a report, and this report of the pathological examiners is to the effect that they are dissatisfied with the present method of supplying pathological specimens for their use. We must surely support our examiners, and unless there is some good cause stated, when examiners complain of anything and make a suggestion we should as far as possible adopt their suggestion. In this case they complain that they cannot at all the schools obtain such perfect microscopical specimens as they would desire and they ask us to obtain them for them. At the commencement the question was whether we, the College, were to obtain specimens or whether we were to continue begging and borrowing specimens from other people—whether in fact we were to make use of the voluntary help which has very kindly been extended to us in our weaker days. The schools have very kindly supplied us with rooms to examine in, and with specimens of all kinds, but the day has surely arrived when we might at any rate attempt to supply our own specimens. That was considered, and that object was really approved by this Council twelve months ago when they spent a good deal of money in obtaining instruments and models for examination. The idea—a very good one, in my opinion—was that we would not put the schools to trouble, and that we would have one set of specimens to submit the whole of the students of the four schools to. What is the difference between microscopical specimens and other specimens? Surely we can obtain them from various sources, either by begging, borrowing, or better still, paying for them—that would be fair to every school, because they would be taken round to every student. I ask you, then, not to adopt the latter portion of this report, which

says that we should continue to subsist upon the charity of the schools for our microscopical specimens, and that when the schools are unable to afford such specimens as the examiners require the examiners should make up the difference themselves. That is a little cool, it strikes me. Just notice the insult to the schools which I am trying to protect—"when the schools are unable to provide proper specimens." If a school sends in three specimens or meets with an accident, the examiner would then have to supply the whole of the 60 or 150, whatever was necessary, and if he is to carry them all round with him why trouble the schools at all? Let us go a little further, and ask him to supply them altogether. He has got them, he must have them, or he could not make up what is required. Or what is better, let us be independent of the schools and examiners and everybody; let us be the examining body, and supply the materials for examination ourselves. I think the whole case is so clear that all I ask is that you shall not do things in a hurry. I ask you to remember that a magnificent majority of *one* carried this yesterday. Let us, in short, ask Dr. Woodhead and Professor Delépine what they want, and to give us a suggestion as to how to obtain the specimens they require. Let us adopt the report with the exception of the last part, and then refer that back to the Committee for further consideration,

Prof. McFadyean: The facts of the case are these: The examiners in pathology have in the report given us to understand that at one or more of the schools an inadequate number of specimens were sent up for the examination in May last, and they suggest that in order to permit of their making up perfect specimens the various teachers of pathology should be asked to send in sets of specimens. I yesterday pointed out to the small committee which considered this subject that in my view the examination had, upon the whole, been conducted with sufficient stringency and with tolerable fairness in the past, and that pathology is such a wide subject that if one were to attempt to illustrate by 300 sections it might still be said that some portions of the field were insufficiently represented, and when a teacher desires to illustrate his lectures he can hardly, in the small time allowed for the teaching of pathology, do more than drill them on say 60 or 80 preparations. He takes those which best illustrate the lectures he has given, and another teacher may take another 60 or 80 out of the 300 to instruct students upon. It would be impossible to get up a set of preparations in the way suggested by the examiners. They suggest the Council should ask the teachers in the various schools to send them in a stock set of preparations, to become their property, to select what they like, and throw the others away.

Mr. Hunting moved as an amendment "That the report be adopted, except so far as the obtaining of pathological specimens is concerned, and that the Secretary be requested to write to the examiners for a full expression of their desires."

Mr. Mason seconded the amendment.

Professor McFadyean: I should like to meet the views of Mr. Hunting in this matter. Will he accept this—"That the examiners in pathology be informed that the Council desire them to obtain whetever specimens they consider necessary, and from whatever source they consider best."

Mr. Hunting: I will accept that if you will add that the Secretary shall obtain their reply, so that we may know what they are going to do.

Professor McFadyean did not agree to this addition, and subsequently his suggestion was abandoned.

Mr. Hunting's amendment was then put to the Council and lost, nine voting for and 12 against. The report of the committee was then adopted.

Notice of Motion by Mr. Kidd.

Mr. Kidd in moving—"That a deputation be appointed to wait upon the

Right Hon. W. H. Long, M.P., Minister of Agriculture, with reference to the claims of qualified veterinary surgeons as inspectors under the Contagious Diseases (Animals) Act."—said: Nearly two years ago I brought forward a similar resolution. It was then thought by the Council that it would be better to send a memorial, but I think, as time has shown, it would have been better if we had proceeded to interview the Minister. The terms of my resolution are not perhaps so clear as to indicate the grounds for the course which I have now taken. I do not suggest that any steps be taken with reference to the appointment of veterinary inspectors; but I think something ought to be done in respect to the work they do and the work they ought to do. I do not think it is sufficient that a veterinary inspector should simply go to a place where there is a dead pig, make a post-mortem, and put part of internal organs into an indiarubber bag, send them to London, and have done with it. Pleuro-pneumonia certainly was stamped out by the Board, but at an immense cost. As I said in February, 1894, the Board of Agriculture had in swine fever a very different disease from pleuro-pneumonia to deal with, and they would not stamp it out so easily. Time has proved that the views then expressed were correct, for instead of that disease being mastered it has kept steadily increasing ever since, as the returns show, and I venture to repeat the assertion that swine fever will not be subdued, far less stamped out, until a more thorough system of inspection is established. I again repeat that a more serious disease, animal tuberculosis, is ripe for serious consideration by the Board, and that it will require cautious and careful grappling with. The remedy, in my judgment, is a simple one. Abolish the Animals Department of the Board of Agriculture, and substitute for it a Veterinary Department with veterinary officers. Let that Department have administrative powers, and let the local authorities have executive powers, compulsory and uniform. Suppose war were declared, and our army in the field was controlled and directed by the War Office, would you expect anything but disaster and defeat? In the same way you can only expect losses and failure in eradicating swine fever by the Animals Department. I feel that the right man is at the head of the Board of Agriculture. Mr. Long has had as much experience of stock as most men in his position. He has farmed pretty extensively, and he is one of those who will investigate for himself such matters as are brought before him, and whatever he takes in hand to do he does thoroughly. These are the reasons, then, and I think strong reasons, why this Council should endeavour to lay before Mr. Long those matters which have caused us to feel grieved that our duties have been transferred to those incapable of performing them, and which have given the Board cause to inscribe on its doings during the past two years the word "failure," and which have caused immense loss to the country. If this Council were unanimous in sending a deputation to Mr. Long, or ask him to receive one, which I am sure he would, I feel certain that eventually we would materially benefit. I beg to move the resolution standing in my name.

Mr. HUNTING: I will second Mr. Kidd's motion, and especially I would like to do so if he will leave out the detail about veterinary surgeons and inspectors, and make his resolution read—"That a deputation be appointed to wait on the Right Hon. W. H. Long, M.P., Minister of Agriculture, with reference to the Contagious Diseases (Animals) Act."

Mr. KIDD: I will accept that with pleasure, and alter it in that way.

Professor DEWAR: I should like to hear Mr. Hnnting's views as to what he thinks this deputation is going to bring before the Minister of Agriculture.

Professor MCFADYEAN: What are the specific grounds of complaint?

Mr. HUNTING: My grounds of complaint are very simple. First of all the deletion of the Veterinary Department from the State; secondly the reduction of the number of veterinary officers of the State; thirdly, the use of laymen

occasionally for professional work; and lastly, the non-employment of professional men where they might be employed.

The PRESIDENT: If there is no amendment I will put Mr. Kidd's motion.

The motion was then put to the meeting, and carried: and it was resolved that the deputation should consist of the President, Mr. Kidd, and Mr. Hunting.

General Purposes Committee.

The SECRETARY read the Report of the General Purposes Committee, which stated that it had fully considered the letter from the Board of Agriculture *re* Compulsory Notification, and recommended to the Council that the profession be consulted by a letter as follows, before formulating a reply to the Board:—

> "I am desired by the Council to submit to you a copy of a letter received from the Board of Agriculture. The Council prefer not to give any opinion until the profession has been consulted, and I shall be obliged if you will within the next fourteen days let me know whether you are in favour of adopting such an Act.—Your obed. servant,
>
> (Signed) ARTHUR W. HILL."

On the motion of Mr. MASON, seconded by Professor PRITCHARD, the report was adopted, and it was resolved that the circulars be sent out forthwith.

Steel Memorial.

The SECRETARY read the report of the Steel Memorial Committee, which stated that the Committee had examined the finished model of the medal, that they approved of the work, and had ordered the completion of the die.

On the motion of Prof. PENBERTHY, seconded by Mr. FRASER, the report was adopted.

Finance Committee.

The SECRETARY read the report of the Finance Committee, which recommended that the present liabilities, amounting to £291, should be discharged, leaving a balance at the bankers of £59. It also recommended that the sum of £55, received from the various societies, be transferred to a separate account at the bankers to the credit of the fund of the British Institute of Preventive Medicine.

Mr. TRIGGER moved, and Mr. MULVEY seconded, the adoption of the report, which was agreed to.

Date of Professional Examination.

Prof. MCFADYEAN suggested that the written examination might be held on Friday, 13th December, the oral beginning in London on the following Monday, viz., the 16th.

Professor WILLIAMS said that of late years the majority of students came from Scotland and not from England, and proposed that the written examination should commence in Scotland on the 13th, and the orals on the 16th.

Mr. LAMBERT seconded Professor Williams' proposition.

Professor MCFADYEAN then moved as an amendment that the written examination be held on the 11th December, and the orals, in London, on the following Thursday, in order to allow ample time to finish in Scotland, taking the same order as before.

Mr. TRIGGER seconded the amendment.

Mr. HUNTING said that if it were a matter between the Scotch and English schools as to which should be examined first, the fair thing would be to make the examination alternate, one year in England and the next in Scotland. Last year it was held in London first, therefore this year it ought to go to Scotland.

The PRESIDENT: We had better separate the oral from the written. I will

put Professor McFadyean's amendment that the written examination be held on the 11th December all over the kingdom.

This was agreed to, eight voting for, and six against.

Professor McFadyean moved "That the oral examination be held in London on the 12th December."

Mr. Trigger seconded the motion.

Professor Williams moved as an amendment "That the oral examination be held in Scotland on the 12th December," and this, after a short discussion, was agreed to.

Fellowship Examination.

On the motion of Mr. Wragg, seconded by Mr. Trigger, it was agreed that the Fellowship examination be held in London on December 10th.

Notice of Motion by the President.

The President said the following stood in his name, but he would be pleased to hand it over to any other member of Council: Alteration of regulation 2, 3rd schedule, p. 85 of Register, "That the words 'four guineas,' be substituted for 'five guineas,' and that the paragraph shall read as follows: '2. An examination fee of four guineas shall be paid for each examination.'"

Mr. Lambert said he should be pleased to act as mover at the proper time.

Notice of Motions by Prof. Penberthy.

Prof. Penberthy gave notice that he would move the following motions at the proper time:—

(1) "That advertising by veterinary surgeons in the public press, or by exhibiting or distributing circulars, books, or cards relating to their professional attainments or abilities, or respecting medicines or appliances prepared or sold by them, amounts to conduct disgraceful in a professional respect within the meaning of Section 6 of the Veterinary Surgeons' Act, 1881."

(2) "That if any veterinary surgeon shall permit his name to be used by an unqualified or unregistered person, or do permit any other act whereby an unqualified or unregistered person may pass himself off as or practice as a veterinary surgeon, he shall be deemed guilty of conduct disgraceful in a professional respect within the meaning of Section 6 of the Veterinary Surgeons' Act, 1881."

Mr. Hunting pointed out that at a special meeting held for the purpose on May 10th a motion *re* advertising, passed at a meeting on May 1st, had been confirmed, but he could find no trace of it in the minutes. He should like to know whether a motion which had been suspended on the board for three months could come on now. He contended that Professor Penberthy was legally entitled to propose his resolutions at that meeting.

The President said the Solicitor would consider the matter, and report what course ought to be adopted at the next meeting.

Motion by Mr. Hunting.

Mr. Hunting: I move "That a printed form be supplied to the Principal of each school, on which the names of all students eligible for examination shall be entered previous to each examination." I do not think there is any objection to this or that it wants any explanation; the only thing is it would bring about complete uniformity and enable us to have a paper drawn up that we could accept without any doubt whatever as to the eligible students for examination. I suggest that it be left to the Examination Committee to draw up the form.

Mr. Mulvey seconded the motion, which was agreed to.

Notice of Motion by Mr. Mulvey.

Mr. MULVEY: I beg to give notice that at the next meeting of Council I shall move "That bye-law 97 be altered in this way: to omit the words 'if the names of at least four candidates shall have been entered for that purpose.'"

The PRESIDENT: That will be suspended in the usual way.

Educational Certificates.

Professor MCFADYEAN: I am afraid, Mr. President, that no very accurate record is being kept of the educational qualifications of the candidates for the diploma at the present moment. I think if it were asked with reference to any particular gentleman who may come up for his examination next December what educational certificate he presented, the date and the subjects, nobody could supply the information.

Mr. A. W. HILL: I could, sir. Could you mention any name.

Professor MCFADYEAN: I have good grounds for my belief, although it might not be expedient for anybody if I stated them at the present moment. But in any case I think it would be wise if we directed our secretary as follows—this is not a resolution nor a bye-law, it is a mere instruction which would come into force at once:—"That the secretary be instructed to prepare and have printed for the information of each member of Council, a statement showing the educational certificates presented by each candidate for the diploma, the date of such certificate, and the subjects specified in it as having been passed by the candidate."

Professor PENBERTHY: I will second that.

Professor MCFADYEAN: Might I, in explanation, point out that it is a rather long and complicated list of certificates which is accepted by this body, and it is conceivable that our secretary or the secretary for Scotland might make a mistake; it is also conceivable that a student might desire to be examined though he was not in possession of one of those certificates. We want to safeguard that. I think for the present we might make it apply to all those who have not got the diploma; in future it will only apply to Class A. It is possible that there are gentlemen who, but for this, might get through in December with a certificate which does not entitle them to do so.

Professor WILLIAMS: I might raise an objection to that, because the secretary for England or Scotland may have accepted a certificate permitting a man to go up for his first and second examination, and that man may be stopped in his final, quite unaware of the fact.

Professor MCFADYEAN: We should like to know whether it has happened or not.

Mr. J. A. W. DOLLAR: Although a very great injustice might result to some individuals, a very much greater would result to the whole body corporate by men who have not the necessary qualifications being slipped into the profession. It is our business to prevent anything of the sort happening, and instead of attempting to shield persons who may have obtained such an entrance, it should be our duty immediately to detect and stop them, and that would be the effect of this resolution.

Professor WILLIAMS: That means that we are trying to find out if our secretaries have been doing their duties—it is a vote of want of confidence in them.

Mr. DOLLAR: It is nothing of the kind. If our secretaries have fulfilled their duties we cannot find any fault with them; if on the contrary they have failed in their duties it is our duty to reprove them and prevent them making such errors in future. We ought to consider the interests of the profession first and those of mere individuals afterwards.

The PRESIDENT: There is a bye-law which says that students who enter veterinary schools shall, prior to their first professional examination of the R.C.V.S., produce to the Secretary of the R.C.V.S. one of the certificates specified in the schedule annexed. Certainly our Secretary cannot prevent a man going up if he has already passed one or two examinations and fails to produce his educational certificate for his "C."

Professor DEWAR: Whatever the Council may decide for the future, I do not think it has any right to go back on students who have already passed their "A" examinations.

The PRESIDENT: I think it would be dangerous for our Secretary to act upon that instruction and keep a man from coming up.

Professor MCFADYEAN: I hope it is not due to the manner in which I proposed the motion, but it is merely to obtain information. I said nothing about a student being stopped.

Mr. HUNTING: I wish to remind Professor McFadyean that a strong argument he urged was that the passing of this resolution might prevent some man from getting his diploma in December. Now if that is not exactly the same, barring the wording, as preventing a man from going up, I should like to know what is the meaning of the English language. If we accept this suggestion of Professor McFadyean's and find three men whose certificate is not as it ought to be, then the natural corollary is to dismiss the secretary, but if we do not dismiss him and say that the three men produced fraudulent certificates, then the question comes whether we shall decline to examine them again and stand a law-suit for it, or what we are to do. It looks to me that if this innocent wedge gets driven home, it will split something into two or three pieces.

Professor McFadyean's proposition was then carried, 13 voting for and 5 against.

The late M. Pasteur.

Mr. HUNTING: We have just lost in M. Pasteur the greatest scientist of this century at any rate. Do not you think we ought, as a collective body, to send some mark of our esteem in the form of a vote of condolence to his family. I beg to propose that the President take steps to communicate with the family of M. Pasteur, expressing our sympathy with them on the loss they have sustained.

Mr. DOLLAR seconded the motion, which was agreed to.

The obituary list was then read, and the Council adjourned.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

THE annual general meeting was held on Thursday evening, the 3rd inst., at the Royal College of Veterinary Surgeons, 10, Red Lion Square, Bloomsbury, Mr. Sidney Villar presiding. The other Fellows present were:—Messrs. A. L. Butters, Veterinary-Captain E. R. C. Butler, A. V. D., Veterinary-Captain L. T. Blenkinsop, A. V. D., J. Hall Brown, H. W. Caton, J. A. W. Dollar, Thos. C. Garry, W. Hunting, J. S. Hurndall, Professor F. Hobday, F. W. Kendall, F. C. Mahon (Hon. Sec.), Professor J. Macqueen, Professor Penberthy, R. Porch, A. Prudames, J. Rowe (Hon. Treasurer), W. Roots, Hugh Singleton, W. E. Taylor, F. Wright, F. Orford, L. Walpole; and as visitors: E. Faulkner, Manchester; and Hugh A. MacCormack.

The CHAIRMAN called upon the HON. SEC. (Mr. F. C. Mahon), to read the minutes of the previous annual meeting.

Mr. J. S. HURNDALL having regard to the fact that the minutes of the last annual meeting had been reported in the *Veterinary Record*, now moved that they be taken as read.

Mr. F. W. KENDALL seconded the motion, which was adopted unanimously.

The HON. SEC. announced the receipt by him of communications expressing the writers' regret at their inability to attend that meeting, from Mr. F. W. Wragg, Mr. J. Roalfe Cox, and Mr. A. Wheatley, of Reading.

Election and Nominations.

A ballot resulted in the unanimous election of Mr. W. Reekie, M.R.C.V.S., 556, Oxford Street, W., as a Fellow of the Society.

Mr. F. W. Dowell, M.R.C.V.S., of 128, Jermyn Street, W., was nominated by Professor Macqueen and Mr. J. Rowe; and Mr. Hugh A. McCormack, M.R.C.V.S., was proposed by Mr. J. Rowe, and Professors F. Hobday and Penberthy. Mr. J. Randolph Welsby, M.R.C.V.S., was also duly nominated.

The Report and Balance Sheet.

The HON. SECRETARY then read his report and the Hon. Treasurer's balance sheet for the past year as follows :—

Mr. President and Gentlemen,—During the session 1894—5, 17 new Fellows have joincd the Society, and one has resigned. By death we have lost in the person of Professor T. Walley, both an active member of his profession and of this Society, one who at all times generously lent his aid towards advancing its best interests.

At the present time the Society numbers 140 members. During the year five council, and nine general meetings have been held. The average attendance has been 34.

Five papers or addresses have been delivered, viz. :—

1. Presidential address, S. Villar, Esq., F.R.C.V.S.

2. Report on the XVII. "Veterinary Section" of the International Congress of Hygiene and Demography, by J. A. W. Dollar, Esq., M.R.C.V.S.

3. "The Legal Aspect of Soundness," Veterinary-Captain E. R. C. Butler, A.V.D.

4. "Glanders," by Professor J. McFadyean, M.B., Dean R. V. Coll.. London.

5. "Pelvic Fractures," by W. Hunting, F.R.C.V.S.

A number of interesting *post-mortem* and other specimens have been shown at the meetings, the discussions being well maintained.

The Society has during the past year made a grant of £50 towards the Jubilee Memorial R.C.V.S.

The receipts during the session have been £160 5s, 6d., expenditure £78 13s. 8d., leaving a balance cf £81 11s. 10d., exclusive of £150 on deposit in the Hammersmith Branch of the London and County Banking Company.

(Signed) F. C. MAHON. *Hon. Sec.*

The CHAIRMAN: The balance-sheet is in print before you, and I am sure, if any gentleman has any question to ask concerning its items, our honorary treasurer, Mr. Rowe, will be pleased to answer. We are all glad, I am certain, that the year which now closes has been another record year in the history of our Society. Our receipts have been in excess of those of previous years.

Mr. W. HUNTING: Mr. President, you will doubtless remember that I once withdrew a motion to make a grant from the funds of this Society because of an intimation on the part of Professor Macqueen that we had not enough money in hand. I now want to give notice of my intention to bring before this Society the expediency—I may say the necessity—of making a grant to the British Institute of Preventive Medicine. I see by the printed balance-sheet that there is a balance of £81 11s. 10d. in the hands of the treasurer, and I think the fact affords me a favourable opportunity to re-introduce my motion.

Mr. ROWE: I presume we are not going to discuss it now.

The CHAIRMAN: No. Mr. Hunting merely gives notice of his motion now.

Mr. ROWE: I wish to point out that £50 of the £81 11s. 10d. has already been voted as our donation to the Jubilee Memorial Fund.

Mr. HUNTING: But is not that £50 included in the total expenditure of the honorary treasurer and honorary secretary, amounting to £78 13s. 8d., as appears by the printed balance-sheet?

Mr. ROWE: No, I have not paid it yet.

Mr. HUNTING: But it is some months since the £50 was granted.

Mr. ROWE: I have been awaiting an application for the money.

Mr. HUNTING: This printed balance-sheet affords no explanation of thc separate items. One would naturally suppose that the £50 would be included in the total expenditure given as £78 13s. 8d., seeing that the sum was voted so long ago.

The CHAIRMAN: The honorary treasurer has already explained to the Council of the Society that the reason he has not paid the money over is that no application has been made for it, and he does not know to whom the £50 is to be paid.

Mr. HUNTING: Do you mean to say that the treasurer does not know to whom and for what purpose, the grant of £50 was made?

The CHAIRMAN: I mean that as yet he has not been made aware of the individual authorised to receive the money.

Mr. HUNTING: It is a peculiar explanation. I think we have a right to ask why the money has not been paid over.

Mr. ROOTS: I think that when future balance sheets are presented to us in print the different items of expenditure should be given more fully. The papsr before us to my mind conveys no idea how the money has been disbursed. All it says is: "Expenditure of hon. treasurer and hon. secretary £78 13s. 8d." I think the items of expenditure should be given.

The CHAIRMAN: I may, perhaps, remind you that the auditors have signed the balance sheet as correct. They are present.

Mr. BUTTERS: As one of the auditors I agree with what Mr. Roots has said. I may explain the reason why the items of expenditure have not been fully set forth. Our secretary was very anxious that a statement of account should be printed and in readiness for thls meeting. and time would not allow of each item being got out and stated separately. It was thought that, if further information were needed, questions could be asked and answered at this meeting. The secretary has all the items of receipt and expenditure n his possession.

The CHAIRMAN: Has any gentleman any further remarks to make, or will some gentleman move that the report and balance-sheet, which we have just heard read, be adopted?

Professor PENBERTHY: I move that the report and balance-sheet be adopted, and I think we may congratulate ourselves upon having a very healthy balance.

Mr. HURNDALL seconded the motion.

Professor MACQUEEN: I am one of those individuals who would like to know something more about this £78. What was it expended for? We don't want all the items, but a few.

Mr. ROWE: I may tell you that the items of expenditure include the hire of the room for our meetings, waiter, refreshments at the rate of 1s. a head, printing, stationery, and telegrams, the reporter's charges, and cab and 'bus fares of our secretary and treasurer, who have books to bring with them to the meetings. Then the dinner account was exceptionally heavy, amounting to over £14 14s. The whole of the items of expenditure are open to your inspection, and can easily be got at.

Professor PENBERTHY: They have been audited?

Mr. ROWE : Yes, every item.
The motion was then put and carried.

Election of Officers and Council.

Messrs. Roots and Walpole having been chosen scrutineers of the voting, the meeting proceeded to the election of officers and Council for the ensuing year.

The CHAIRMAN : The first officer whom we have to elect is the president, and taking advantage of the position which I still occupy as your president, I wish to bring to your notice a name which I am sure will meet with approval from each one of you. In submitting a name to you, I wish it to be clearly understood that it is open to any gentleman to propose another Fellow of the Society as its president during the ensuing year. Few words are needed for me to commend to you the gentleman whom I have pleasure in nominating as president of this Society; and it is needless for me to explain to you the advantages likely to follow his election, so far as the dignity and interests of the Society are concerned. The gentleman to whom I thus refer is well-known to all of you and for many years he has been an active member of this Society. With these few words, I beg to propose the election as our president of Professor Penberthy who will, I believe, be willing to undertake the duties of the position if he be elected.

Mr. PRUDAMNS : I shall be only too happy to second that propositon. We have had ample opportunities for observing the high qualities of Professor Penberthy. I have much pleasure in seconding the nomination of that gentleman as president of this Society.

The motion was then formally put and carried unanimously.

The CHAIRMEN : Professor Penberthy, I have great pleasure in informing you that you have been unanimously elected to preside over the deliberations of the Central Veterinary Medical Society during the ensuing session.

Professor PENBERTHY : Mr. President and gentlemen, I accept your kindness with a good deal of diffidence. I should be sorry to deny anything that my good friend (Mr. Villar) has said of me. But I am not a very old member of this Society, and, when I was asked by the secretary some few days ago if, in the event of my nomination I would consent to stand, I tried to show him as clearly as possible how important it was that my election should not put anyone who had greater claims, out of office. I do not know anything about the rotation in which Fellows succeed to the chair of this Society, nor am I at all sure of the qualities which fit a man to become your president. I will not detain you any longer now than to say I most sincerely thank you for the honour you have done me, and I think it is an honour indeed to be the president of the Metropolitan Veterinary Medical Society. At the same time let me assure you that I will do what in me lies to promote the interests of the Society, and to foster the good feeling which has always prevailed at its meetings and everywhere else where it took a leading part. I thank you very sincerely, gentlemen.

The CHAIRMAN : We have now to elect four vice-presidents. The retiring vice-presidents are : Mr. A. L. Butters Mr. A. Prudames, Mr. S. Slocock, and Mr. F. W. Wragg.

There were six nominations, and the voting was as follows :—Mr. Villar, 20 ; Mr. Butters, 15 ; Mr. Mulvey, 13 ; Mr. Wragg, 13 ; Mr. Prudames, 11 ; and Mr. Hurndall, 9. The first four were, therefore, elected.

There were 16 nominations for members of Council, 12 of whom were elected. Professor Macqueen and Mr. Hurndall declined to serve again, remarking that they thought one year's service on the Council was "quite enough." Professor McFadyean, 21 ; Mr. H. Singleton, 20; Captain Butler, 19 ; Mr. Hunting, 19; Mr. J. A. W. Dollar, 18; Captain Blenkinsop, 18; Mr.

Rogers, 17; Mr. Roots, 16; Mr. H. Edgar, 16; Professor Hobday, 15; Mr. J. Taylor, 15; Mr. Prudames, 14; Mr. H. W. Caton, 11; Mr. Walpole, 6; Mr. Porch, 5; and Professor Pritchard, 5.

The CHAIRMAN: The next election is that of an Hon. Treasurer, and it affords me very great pleasure to nominate Mr. Rowe. We all know Mr. Rowe as a very energetic and valuable officer of this Society. He possesses in a pre-eminent degree two very good points in a Treasurer—he is a first-class man to get money, and secondly he is a very good hand at keeping it when he gets it.

Mr. CATON seconded the motion, which was carried *nem. con.*

Professor PENBERTHY: I have much pleasure in proposing that Mr. Mahon be the Secretary of the Society during the coming year. We all know how well he has done his work before. We have ample assurance that, if he will again kindly accept the office, the Society will have the advantage of the experience he has already gained in the position. As good wine needs no bush I need say no more in order to commend Mr. Mahon to your most favourable notice.

Mr. ROWE: I have great pleasure in seconding the motion. I have had great assistance from Mr. Mahon, and much pleasure in the genial company of my friend and colleague. I can testify to his worth from my own personal experience.

The resolution was adopted unanimously.

At the instance of Professor Macqueen, Mr. Butters was unanimosly re-chosen auditor, and Mr. Garry was, on the proposition of Capt. Blenkinsopp, appointed his colleague.

Thanks to the Retiring President.

Mr. PRUDAMES: I rise to propose a vote of thanks to our retiring President, Mr. Villar, for the able manner in which he has conducted the business of this Society, not only this evening, but generally during his term of office.

Vet.-Major KETTLE seconded the proposition, which was adopted by acclamation.

The CHAIRMAN: I thank you very much, and very fully appreciate your kind vote of thanks. I cannot help feeling that I really have not done as well as I ought to have done, but, as many of you will recollect, I was considerably handicapped in the early part of the past session by family matters. I think I may claim that the session has been a success. That fact, however, was not due to your President. It was due to gentlemen who kindly came forward with very valuable papers and very interesting specimens; and also to the gentlemen who have taken part in the discussions. Nor must I omit the arduous duties performed by our honorary secretary, Mr. Mahon, and our honorary treasurer, Mr. Rowe. I feel that your thanks are really rather more due to those gentlemen than to me. Nevertheless, I thank you very much for your kind vote of thanks.

The proceedings then terminated.

SOUTH DURHAM AND NORTH YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

The seventh annual meeting was held on Friday, September 6th, 1895, at the North Eastern Hotel, Darlington. There were present Messrs. A. Peele, West Hartlepool; P. Snaith and H. H. Roberts, Bishop Auckland; W. N. Dobbing, C. G. Hill, and J. H. Taylor, Darlington; G. E. Gibson, Sedgefield; H. Peele, Durham; Professor Williams, Edinburgh; Jno. Gofton, North Shields; J. W. T. Moore, Newcastle-on-Tyne; and W. Awde, Stockton-on-Tees.

Mr. A. PEELE presided until after the confirmation of the minutes of the previous meeting (proposed by H. Peele, and seconded by P. Smith) when he vacated the chair in favour of Mr. P. Smith, the president-elect.

A hearty vote of thanks was then accorded to the retiring president for his conduct in the chair during his year of office, proposed by P. Snaith, seconded by W. N. Dobbing, to which Mr. Peele suitably replied.

Messrs. S. Fenny, M.R.C.V.S., Durham, and J. H. Taylor, M.R.C.V.S., Darlington, were then unanimously elected members of the Association, proposed by A. Peele, and seconded by W. Awde.

The TREASURER (Mr. H. H. Roberts) then presented his annual report, which was adopted, and the accounts still owing ordered to be paid proposed by W. Awde, and seconded by A. Peele. It showed a balance in hand of £11 7s. 5d., but there were outstanding subscriptions due to the Association amounting to £9 19s. 6d. which it was decided to leave in the hands of the treasurer and secretary to deal with before the next meeting and to report upon, so that some action could be taken if necessary.

Presidential Address.

Gentlemen,—The first duty that devolves upon me is to thank you for the honour you have done to me in electing me as your President. It is not without trepidation and doubt of my fitness for the duties, so ably and thoroughly carried out by our late president, Mr. Peele, and I ask you to help me to maintain the kindly and brotherly feeling of unanimity that has existed through the past year.

Before proceeding to the other business of the evening, I wish to draw your attention by a few brief remarks to matters directly relative to the veterinary profession.

A few months ago we received the Report of the Royal Commission on Tuberculosis. As all of you, no doubt, will have read the Report, it is sufficient for me to say that I am well satisfied with it, and that it more nearly represents my views on Tuberculosis than I myself could have expressed them. Therefore, having the Report before us, are we content to let it rest here? Most certainly not. Legislation is needed, and that urgently. When I tell you that a dairyman in our town exposed a milk cow in the public auction no later than Monday last, and that only 8s. was bid for her, you will all agree with me that it is a lamentable fact that we have no power to interfere. To my mind there is no agent or means so active in spreading Tuberculosis as milk. Two remarks in the Report impressed me very forcibly, viz.: "Tuberculous disease is observed most frequently in cattle and in swine" and "both carnivora and herbivora are susceptible and the proportion is high in pigs."

Well, gentlemen, during the few years that I have been in practice, it has been my lot to make *post-mortem* examinations of, perhaps, two or three hundred pigs, and although, whilst at College, I frequently saw the disease in swine, yet, since I left, with one exception, I do not remember seeing an undoubted case. But, curiously enough, that case only occurred in the beginning of last week. When you consider that these are mostly cottagers' pigs, fed mostly on meal and garden produce, and that they have no milk to give them, which in other districts and among farmers is more plentiful, you will partly see why I put so much stress upon milk as a source of contamination. I made enquiries with a view to finding out, if possible, the source of contamination in the case I spoke of, but was only able to ascertain that the pig was bought at a few months old from a small dairyman who bred it. Gentleman, I am not one who believes much in hereditary tuberculosis, and if you put to one side the cases that are congenital, I think the percentage is very small indeed.

But let us return to the matter of legislation. Do we use the powers we

have? Is the Milk Shops and Dairy Act properly carried out? Do the authorities take advantage of the powers conferred upon them to erect public slaughter-houses under skilled supervision? I say emphatically, no; and that the inspection of dairies is often a mere farce, whilst most of the boroughs neglect to adopt the public slaughterhouses. Is it fair to the rural population, which in this county is very large indeed, that they should be excluded from the benefits conferred upon their neighbours? At one time there were a great many difficulties in the way, but now, when every parish has its Council, I should insist on all milk vendors being licensed, and on a rigid inspection being made of all dairies with power to reject all cows affected with, or suspected of, tuberculosis. I should also insist on all meat being killed in a public slaughterhouse under competent inspection, and I do not see why such tuberculous meat as was deemed fit for food by the inspector should not be labelled as such in the same way as margarine is. Place it in shops expressly for the purpose if necessary, which shops should belong to the authorities. I myself would give compensation to the butchers, who, as the law now stands, are in a very unenviable position, the authorities taking the carcase and making the most of it. Perhaps some of you will say why not put tuberculosis under the Contagious Diseases (Animals) Act and make an end of the thing at once. Most certainly this should be done, but I do not think there is any likelihood of any very active measures being taken, especially as tuberculin has greatly multiplied the number of diagnosable cases, and I wish to insert the thin end of the wedge and push it home slowly and surely.

With reference to the alleged failure of the Board of Agriculture to cope with swine fever, I am not sure that we have grounds to say that they have failed. At any rate, the accusation will not hold good in this county. I do not mean to justify the appointment of a layman to the head of the Veterinary Department, for I hold that great injustice has been done to the profession, but at the same time I believe immediate slaughter and compensation to be the right method to adopt. There is no doubt that much more expense is incurred than is necessary. It seems a strange inconsistency that if a pig is alive it is left to the judgment of the local veterinary to say if it is or is not swine fever, and they accept his dictum; yet if a pig is found dead they must send the viscera to London. In my opinion only those cases which are considered to be swine fever should be sent to London. This wonld save much expense in time, cost of burial, carriage, &c. I do not see why the local veterinary could not carry out the duties now undertaken by the travelling inspector qnite as efficiently and at much less cost.

The Royal College of Veterinary Surgeons have recently been considering two questions, viz., covering and notification.

With regard to covering, it is not a serious question for us if you except those cases where veterinary preparations are sold throughout the country, wholesale and retail, by firms, one member of which may have a qualification. In this matter something should be done if possible. It would be very hard to deprive the country practitioner of his unqualified assistant so long as they are only assistants and not partners. I would ask what becomes of all our students who fail to satisfy the examiners? Some of these return to their homes and are called by the neighbours "the vet." and "the young vet." and, often being in possession of a few recipes, and the little knowledge that is so dangerous, become in the habit of practising in a small way. These we must keep a tight hand upon, especially as they have proved themselves incompetent.

If we are to have notification of infectious diseases, what are they to be? It is already incumbent on owners to report all those diseases coming under the Contagious Diseases (Animals) Act, and acting under the advice of their veterinary, they generally do so. If they are determined to conceal the fact

of the existence of the disease, it can do no good to enforce it. It may be otherwise in the large towns, but to us as country practitioners, it is unnecessary, unless you are going to draw up a new schedule of diseases.

In conclusion, I may say that I have mentioned one or two reforms of measures which I should like to see developed, and if you are with me in these matters, much depends on ourselves. I do not expect that they will be brought about at once, but it rests with us and our sister profession to educate the public mind to the fitness of these things, and by perseverance and unity let us be the little leaven that shall leaven the whole lump.

A vote of thaks was proposed to Mr. Snaith for his address, and it was duly acknowledged.

A letter was read from the Scottish Metropolitan V.M.A., asking for the co-operation and support of the Association in their endeavour to induce the Coucil of the R.C.V.S. to lay before the present Minister of Agriculture the conclusion arrived at by the Royal Commission on Tuberculosis, and the danger to human health arising from the consumption of milk and meat derived from animals affected by the desease. That, in their opinion, bovine tuberculosis should be included in the Contagious Diseases (Animals) Act. That all dairy cows should be placed under veterinary supervision, and that among all suspected herds and dairy stock the use of the diagnostic test tuberculin under scientific supervision should be made compulsory. [The letter has already appeared in these pages.]

Mr. SNAITH proposed that a letter be sent to the Council of the R.C.V.S., asking them to accede to their wishes and lay the matter before the Minister of Agriculture, and that a letter be sent to the Scottish Metropolitan Veterinary Society, stating that this had been done, seconded by Mr. Hill, and carried unanimously.

Clinical Notes.

Mr. GIBSON stated that he had a case recently of acute gastritis in a mare which, on *post-mortem* examination, revealed the presence of 60 to 70 ascaris megalocephali in the stomach and duodenum. He also mentioned a case of malformation met with in a foal, in which milk came down both nostrils—the animal was rather thin in condition. On examination he found the soft palate was divided longitudinally.

Professor WILLIAMS stated that he had seen a similar case in a three-year old carting filly. She was, however, in good condition; but he was unable to advise any treatment for adoption in such cases as it did not seem to him to be feasible.

Professor WILLIAMS also mentioned another case of a horse which had rested for a day or two; when called he found both thighs immensely swollen, also over the ribs on the near side. Mucous membrane highly tinged, animal immoveable from the spot. Diagnosis, purpura hœmorrhagica, but internal temperature was only 95° F. In the afternoon very large swelling on near shoulder, temperature 107° F., purple spots on nose, and petechial spots on nostrils. Tried potass. chlorate and sodii hyposulphite for four days, but found the animal gradually getting worse, when he commenced intra-tracheal injections of iodine, 4 grs. of iodine to the ounce of pot. iodid six days in succession. Improved rapidly with this treatment. Considered that iodine was too volatile to obtain the same results by the mouth as could be obtained by intra-tracheal injections.

The SECRETARY referred to two brain cases met with recently. In the first the horse went round the box, but always in one direction. *Post-mortem* revealed two small tumours in the ventricles of the brain. In the other case the ear, eye, lip, and off side of face were paralysed. There was no power to elevate the tail nor to pass dung, which had to be removed by hand twice a day. At first the catheter had to be passed in order to take off the urine, but

after two or three days treatment she passed urine herself, but without the usual elevation of the tail. Treatment with nux vomica and tonics was tried for about a month, but little or no improvement was manifest, so had her destroyed. *Post-mortem* examination disclosed injury to the bones of the head on the off side.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of the above Association was held at the Grand Hotel, Manchester, September 13th, 1895.

Tea at 5 p.m., business at 6 p.m.

Present: Mr. Wm. Dacre, President, in the chair, Professor Williams, Messrs. George Morgan, Liverpool; E. Faulkner, Alexr. Lawson, T. Hopkin, H. Hall, Lloyd Jones, J. B. Wolstenholme, S. Locke, R. C. Moore, E. H. Stent, and H. D. Chorlton, Manchester; J. C. Carter, Bradford; J. H. Carter, Burnley; R. Hughes, Oswestry; Wm. Woods, Wigan; E. E. Gubbin, Glossop; W. Ackroyd, Hebden Bridge; Jos. Hall, Oldham; H. B. Allen, Accrington; A. Munro, Altrincham; Wm. Hall, Royton; J. McKenna, Huddersfield. Visitors: J. E. Scriven, Tadcaster; A. Butters, London; R. M. Sunderland, J. Kerr Calderwood, J. R. R. Hamilton, A. O. Hughes, and R. W. Hadfield.

The minutes of last meeting were taken as read upon the proposition of Mr. J. H. CARTER, seconded by Mr. E. FAULKNER.

Mr. J. B. WOLSTENHOLME exhibited specimens of an ulcerated colon of a foal. Ulceration being due to immature strongulus tetracanthus.

The PRESIDENT said he had not seen anything of the sort.

Professor WILLIAMS said he had seen this condition in young horses 25 years ago. He had not seen it in foals in his life. He was of opinion that the worm had been brought from Iceland.

Mr. CARTER asked Mr. Chorlton if he adopted any treatment in the case of the foals, and if so what?

Mr. CHORLTON said that since the cause of the complaint was found out the ponies had received two drachm doses of turpentine each day, the small ones proportionate doses. The animals seemed to be improving under the treatment accompanied by a liberal diet.

Mr. HOPKIN stated he had been requested by Mr. Laithwood to propose that the undernoted resolution be passed by the Lancashire Veterinary Medical Association, and sent to the quarters he suggested:—

> "That in the opinion of the members of this Association it is highly advisable that, owing to the undoubted contagious nature of tuberculosis and great loss resulting to the stockowners of this country, and the admitted danger of its transmission to the human subject, the said infectious and dangerous disease should be included in the Contagious Diseases (Animals) Act, and that legislation is urgently required with the view to its extermination, and that a copy of this resolution be forwarded to Lord Salisbury, the President of the Board of Agriculture, the President of the Royal Agricultural Society."

Mr. ALEXANDER LAWSON seconded the proposition.

Professor WILLIAMS said some additional weight might be given to the resolution if it were sent to the Highland and Agricultural Society of Scotland which Society was similar to the Royal Agricultural Society of England.

The resolution was passed unanimously.

The PRESIDENT then called on Professor Williams to give his paper on some experience of surgical operations.

Professor WILLIAMS said the few observations he intended to make had little or no theory in them, but he hoped they would lead to a practical discussion. He gave his own views and experience of the ordinary operations

performed in veterinary surgery, and whether it was justifiable in continuing some of them or not, was a matter for the members to bring out of their individual experience.

As far as he could remember the first operation that he ever saw performed was one which was recommended in the older books, viz., that of taking up and tying what is now termed the zygomatic branch of the temporal artery. Periodic ophthalmia was a very common disease in his earlier days, and it was recommended that this blood-vessel should be taken up and tied in order to limit the flow of the blood to the eye and in this way prevent or cut short the inflammation which led to the formation of cataract. He remembered his grandfather performing this operation but there was no result, the inflammation of the eye went on as bad as before. Now he desired to point out that the operation by the old farriers was quite as rational as the bleeding from this vessel, recommended even at present for phrenitis because this artery had no more connection with the brain than it had with the eye, and he thought that even the old farriers were upon this point quite as correct as some practitioners of the present day. Regarding eye operations he had had during his experience about 15 cases of what was described as fungus hæmatoides, where the disease appeared as a red speck at the bottom of the eye, the latter becoming as large as a cauliflower, protruding from the orbit and bleeding upon the slightest touch. Thirteen of the operations had been performed on horses and two upon bullocks. In this disease his *modus operandi* was to remove the eye completely, and any diseased tissue remaining was destroyed. In horses there was a recurrence of the same, but in cattle they lived sufficiently long to be made fit for the butcher. He had noticed that in America at the present time they recommended in periodic ophthalmia that the aqueous humour should be let out, the result being pronounced good. As a matter of fact this was done by a Dublin veterinary surgeon named Ferguson about 40 or 50 years ago. The operation was in vogue in his (the Professor's) younger days—he had never seen it performed but had read about it—the result was a temporary improvement—periodic ophthalmia *was periodic ophthalmia* and it came again, and the only argument to bring forward was that there was a temporary improvement. Sir David Brewster made certain observations in cataract in the human being, and he said cataract was due to the absorption of fluid from the lens owing to the aqueous humour containing too much saline material, in certain conditions, viz., and in oldish people, and therefore abstracted the watery portion of the lens and that the latter contracted and became drier than natural, having somewhat the appearance of an onion when it is cut. It was well known that in an inflamed part the effusions of the liquids into it contain increased quantities of saline matters. By allowing this escape of the aqueous humour it is replaced by less saline fluid and in this way the thing may be delayed, but so far as his (the Professor's) remembrance went, the removal of the aqueous humour did not at all prevent the final blindness of the animal. He narrated the case of a Clydesdale horse which was brought to the veterinary college, the owner stating it had a maggot in its eye. There was certainly something like a maggot in its eye but it was not very distinct. He feared the operation the day the owner called at the College, but after applying cocaine to the eye he punctured the cornea when out came a maggot ¾ of an inch long and alive, the larvæ of some fly, but what fly he did not know; it was not an ordinary maggot generally found in decomposed meat, it was longer and finer. The horse did remarkably well. In all operations on the eye and in all operations where the veterinary surgeons do not want to use chloroform he thought the use of cocaine was most valuable, even in firing a subcutaneous injection of cocaine diminished the pain. Speaking of veterinary dentistry, and he had had a good deal of experience in it, he thought there were more cases of diseased teeth

amongst horses in Scotland than in England. He was of opinion, subject of course to criticism, that 99 cases out of 100 of chronic nasal gleet were due to disease of the tooth. In the majority of cases it was the fourth molar. As to the method of procedure in removing the diseased teeth he found it better to use the punch and hammer than the forceps. This direction of the tooth must be correctly laid down. He recommended this method of removing the molar teeth as being far better than the use of any key or forceps. Poll evil was seldom seen in Scotland. He had observed that dry dressing gave good results ; he had found it was best to make a good incision exposing the whole of the diseased structures, to scrape the latter and to apply afterwards dry dressing such as boracic acid, oxide of zinc with starch. This application was excellent treatment. Open parotid duct. The portion anterior to the opening generally became obliterated in a very short time and it is almost impossible to reopen it. The best treatment was to inject the gland with the solution recommended by Percival and thus destroy the gland, the horse will do as well with one gland as with two. Respecting tumours in the front of the shoulder these are more prevalent in Scotch than in English horses as the collars in Scotland did not fit quite as well as those in England. In the old time he used to remove all these tumours, but he found small abscesses and that the tumour consisted of abscess walls sometimes cartilaginous and very hard and cut with difficulty. He found that if these tumours were not large it was quite safe to make an opening allowing the pus to escape, corrosive sublimate injected; the cases did perfectly well and the thickening disappeared. If large tumours then it was best to remove them, but the veterinary surgeon should never be satisfied until he had explored to the very bottom. If any pus cannot gain exit there the tumour will grow as rapidly as though it were of a malignant character. Coming to familiar operations first of all he might say that after the removal of large tumours, and when they had a large one from any cause, he found that a narrow tape $\frac{1}{4}$ of an inch in breadth made a first-rate suture. As to the treatment of splints he did not know how it was, but in the old time every horse that was lame in the forelegs was lame in the shonlder and the treatment was, both shoulders were blistered and very often a rowel put in the breast. The horse would improve ; many got quite sound, under which treatment he could remember that after Turner, of Croydon, discovered navicular disease then every horse was lame in the foot and the latter was treated, setons were inserted through the frogs, and, after a time, many of the horses got better. It was, however, found that many of these horses developed splints, and that undoubtedly the lameness had been due to this cause. These splints were not always easily treated, the lameness often recurring over and over again. He was not going to refer to the ordinary blisters, firing, or setons ; but to draw the members' attention to the method of scraping a splint. He stated he had never yet failed to get the horse to become sound after scraping a splint. He had had many horses recover which had resisted all treatment. In the course of a few days the swelling is larger than ever, and in course of time there is a splint bigger than ever ; but, by-and-by, the horse becomes sound, and after the inflammation has subsided this enlargement gradually disappears, and in the course of a year there is not the vestige of a splint. He asked the members how they accounted for this ? He accounted for it in this way—that in these chronic splints the bone is in a state of chronic inflammation ; by scraping off the diseased bone an inflammation is excited of a more acute kind but of a reparative nature, and thus an acute inflammation, and a more rapid formation of reparative tissue is brought about. He stated that in cases wherever other measures had failed this method had proved successful in every instance, and he could conscientiously recommend it. Now we came to the operation of neurotomy in cases of ringbone, and in cases of

sidebone, very seldom had he seen cases where sidebone lameness seemed to be incurable. In case of ringbone and sidebone the operation of neurotomy had certainly done remarkably well. He was told by a Mr. Anderson that a ringbone would disappear after the neurotomy had been performed, and he found this perfectly true. About navicular disease the mistake was that the horse was worked sometimes for years, and finally becoming unfit for work, before the veterinary surgeon was asked to perform the operation, the result of which being satisfactory for a short time only. The cause of the breakdown is often a fracture of the navicular bone. The operation has been too long delayed—the bone has become brittle. He felt quite sure that if the operation was performed as soon as navicular disease had been diagnosed it would be much more satisfactory, and in many cases it would be found that the low operation did remarkably well. As to firing, it was a very cruel operation, and one that he thought should never be performed without due consideration. No horse should be fired except for a disease where it was thought the operation would prove to be successful. It stimulated a spavin, e.g., the repair, or the enlargement, or the ossification was not the cause of the lameness; it was the reparative material formed for the purpose of uniting the bones together (anchylosis). In some cases there are carious spots in the articular surfaces of the bones; in other cases the process of repair is simply by external union of the bones without there being a union of their surfaces. By firing, this process of repair was stimulated. In all bone diseases, where this reparative process was languid, he thought the operation should still be continued. Coming to a sprain of the tendons, they still fired. The lameness disappeared, but after a time the lameness returned, and the horse was fired again and returned to work. The majority, at least in the towns, became lame again. The question to be answered was, Were the veterinary surgeons justified in firing these cases of sprained tendon? In his opinion, they were not justified in firing a horse for sprained tendon. He got better certainly, but he would get better without that. He did not think the veterinary surgeon should persist in the operation. Tenotomy, he had to admit, was a failure. Unless the horse's limb could be put upon a splint, and kept there for about a year after the operation, he thought the latter was almost worse than useless. The question to be answered was, Were we justified in performing this operation? It was for the members to discuss, and say whether or not they agreed with him.

Quittor.

Having had much experience, he might be able to speak with authority on that point. He had seen all sorts of treatment, the use of various escharotics, corrosive sublimate, &c. He had witnessed all operations for quittor; but his experience was that if the depths of the sinus were measured, then the horn well thinned, and a depending orifice made with a pointed cautery to the base of the sinus, and exit thus given to the discharges, was by far the speediest and the most effective treatment of quittor. After the operation, syringe out and put a plug of tow in the lower orifice.

Operation for Sandcrack.

He thought reversed and shaped grooves on the sides of the crack at once prevented the opening and closing. He generally separated the horn from the coronet, and put on a blister. The horse would go to work in the course of a week or two, and would continue to work until the fissure had disappeared. Approaching a question which caused a considerable diversion of opinion was the scoring of the hoof for a side-bone. This was for the purpose of removing pressure from the ossified cartilages. He was sure his friends, Mr. Carter and Mr. Morgan, would remember that in their younger days the scoring of the hoof was a very common practice. This practice was recom-

mended by Coleman, Bracey Clarke, &c. He denied that the side-bone lameness was due to any pressure of the horn. So far as he knew, the lateral cartilages were situated above the hoof. The hoof did not press on the cartilages. Many Clydesdale horses had sidebones, but few were lame. This scoring or sawing of the foot was also recommended in laminitis, in order to allow the sensitive structures to swell—to expand as well as give exit to the exudation. Professor Dick recommended giving exit to this exudation by making a large opening at the toe when the animal was bled at that spot. Granted, theoretically, that the pain is relieved. What was the result? Even Professor Dick had to confess it—suppuration, and separation of the foot. Since bleeding of the toe was abolished, cases of horses casting their hoofs were exceedingly rare, He said that experiment had proved that septic matters, introduced into an inflamed area, would cause septic poisoning; not only a general septic poisoning, but would cause suppuration. Thus, the exposure of the inflamed structures of the foot, either by sawing or cutting through the wall or soles, rendered them liable to the action of septic germs, numerous in all the surroundings of horses' feet. As a consequence, suppuration occurred in the inflamed tissues, the horn became separated from the sensitive structures, and loss of the hoof was not an uncommon consequence.

The PRESIDENT thanked Professor Williams for the prompt and gracious manner in which he acceded to his request that he should read a paper at the meeting. Professor Williams has taken them a long way back, commencing with surgery in its infancy, and yet he told them that operations quite new at the present time, were performed by his great grandfather and others of that age.

Mr. MORGAN, who left early, thanked Professor Williams for his highly interesting and instructive address. It reminded him of old days to hear the old cures raked up. He agreed with the Professor as to the treatment of Quittor. He considered himself as fortunate in Quittor cases, and his was a rough and ready treatment. It was impossible to follow the sinus.

Mr. CARTER, of Bradford, said he had had a good deal of experience in Quittor and Poll-evil. He agreed with Professor Williams respecting the treatment of Quittor by a hot iron, but if the Quittor be towards the front there was no chance.

Mr. BUTTERS said he did not know that he could criticise Professor Williams' lecture, there being so much of it. He agreed very much with him in a great many of his remarks, except as to firing a horse for spavin, and thinking he had cut the nerve. With regard to operations for removing the molars in the upper jaw, certainly the Professor's method of procedure was simple, and it very soon removed the teeth; but in his experience of removing the upper molars there we not the same good results as removing the molars in the lower jaw—the food had a nasty way of getting into the sinuses. He said it had been a great pleasure to meet Professor Williams and the members, and to listen to the very interesting and useful address.

Mr. J. B. WOLSTENHOLME said Professor Williams' address ought to be a stimulus to the members. Regarding operations on the eye with cocain, it acted like magic. As to removing small tumours, he never had any tronble, Regarding shoulder tumours, he endorsed Professor Williams' remarks. He wished to express the pleasure he had derived in listening to the address.

Mr. E. FAULKNER: I am sure we all desire to heartily welcome our friend, Professor Williams, this evening, and particularly those of us who have had the good fortune to be taught by him. If an indication as to what he is thought of by the veterinary profession in this district were wanted, it is amply demonstrated by the large attendance here to-night, and, undoubtedly, his remarks will be of great benefit to all of us. Although unable to approach him in length of services, we must have had fair opportunities for observation

in our several practices, and now are placed in the fortunate position of being able to utilise the unique and interesting experience of the Professor, which has been long and progressive. Some of the operations referred to I have not witnessed, but there is one that was not mentioned which I particularly well remember, viz., the taking up of the vein in cases of bog spavin. That for specific ophthalmia I never saw, but had the good fortune once to be present when the Professor operated on a case of fungus hœmatoides, and these diseases, we now learn, are liable to recur after operation. As to cocain in minor operations, particularly on the eye, in this respect its use is most successful and of great service. I do not, however, care to utilise it hypodermically, having once had an unfortunate experience. We, however, regularly administer chloroform in major operations, and in the minor, such as firing neurotomy, &c., give an ounce of chloral hydrate twenty minutes before operating. In nasal gleet, occasionally, a troublesome and tedious case occurs that does not yield to treatment, and we suspect the molars. Although there is nothing definite in evidence, I have in such found, on extraction, the condition of the fangs described; and if unable to remove with the forceps, have resorted to punching out. As to poll evil and fistulous withers, generally, I quite agree that success attends bold surgery. The information as to treatment of open parotid duct, is certainly most useful, for although not often seen in general practice, I have known them difficult to treat. One sees a fair number of shoulder tumours in town, containing a small quantity of pus, with great thickening all round. I have at times extracted the pus by means of the aspirator, after exploration, and then injected tinct. iodine with success; and in others, after well blistering, laid them open, liberated the pus, and applied an escharotic to the interior of the tumour. The tape suture material we have used for some time past, and concur in the dry dressing treatment of wounds. My experience as to splints quite coincides with that of the Professor. It is a very frequent cause of lameness in light horses, not only in the young, but the more mature animal, and I think it almost impossible for one to know whether, in certain cases, a splint will cause trouble or not. In neurotomy, what we have heard is, I think, in accordance with our experience. The operation must be performed early, and with conditions otherwise favorable to its success. Of firing I feel warranted in saying it has its use and abuse. In certain cases it is undoubtedly of benefit, when applied early under suitable conditions and in properly selected cases amongst others of which I include sprained tendons and ligaments. It is abused when used without the least chance of benefit as I have seen in scores of chronic, ill-selected cases, under most unfortunate conditions. With the operation of tenotomy, success has followed with the fore-leg, but failure in the hind one. In Quittor, and the method of treating sandcrack, our practice, is that stated this evening, with slight modification according to circumstances. In laminitis, I have failed to satisfy myself on one point, viz.· the presence of an exudate outside the tissues within a few days in an acute attack, for on carefully stripping the feet after death, there has been none present, although the sensitive tissues have been much swollen and discoloured. The dermoid cysts, mentioned by our president, it is our rule to lay well open and dissect out the internal secreting membrane. Mr. Faulkner proposed that the best thanks of the Association be given to Professor Williams for his kindness in being present, and giving them such an interesting and useful lecture delivered in so able and vigorous a manner, indicating that he possessesa master mind.

Mr. Hopkin expressed his thanks to Professor Williams for his admirable address. Regarding sutures, he thought one of the mistakes generally made was that they were put too tight, no allowance was made for the swelling. Whether he used pins or anything else he always made allowance for the

swelling which took place. Coming to splint lameness, he got cases of leg splint where it was most difficult to get rid of the lameness. In firing for spavin, Professor Williams had related a case. He might remark that a similar one had come under his own notice, where a veterinary surgeon had treated the animal for the hip and it was running out at grass. He was a firm believer in not turning out to grass a horse suffering from spavin, and if they wanted to get rid of the lameness they should keep the animal up and raise the heels of the shoe. It took a certain amount of time, but his experience was that they would not get satisfactory results in the treatment of spavin if they turned the horse out to grass. The Professor had said that 19 out of 20 cases of nasal gleet were due to a diseased tooth. The worst cases he had had were those resulting from injuries to the bones in runaways, etc. Respecting sandcrack, he usually removed the horn after making the V shaped incision, the wider portion of the V towards the coronary band. He used to remove the two upper pieces, but recently he had left them in. He could not say that the cases had been quite as satisfactory. It was the cure of sandcrack if they removed them. He was glad to see the Professor and to thank him for his practical suggestions.

Mr. LAWSON said it was a great pleasure to him to listen to Professor Williams' remarks. Open parotid duct he thought was very uncommon. In all his experience he had only seen one case, he injected a solution of nitrate of silver and the face was swollen tremendously. After another injection it made a splendid cure. Splints: Professor Williams had referred to splints and he quite agreed with him that there were very few horses lame in the shoulder, but that the lameness was more often due to the splints. He had seen the scraping Professor Williams referred to performed several times, but the objection of it by the class of people he had mixed with, was that it usually left a mark. If it was a good horse, people object to blemishes and, of course, object to this operation. He believed if they would only give a splint time enough that the animal would get right without the application of fireirons, scraping, or anything else. With regard to neurotomy he had found in large towns it was a very useful operation, especially when he had got a lot of omnibus and tram horses. About sprained tendons, his experience was that in an old horse if it has sprained the back tendon it was scarcely any use treating it. On the contrary, if he had the opportunity of seeing the horse a week or so after it had sprained the tendon and if he fired then the case nearly always got right. As to laminitus or pumiced feet in large towns especially amongst heavy cart horses, they were very troublesome. He thanked Professor Williams most heartily for being present at the meeting. The address had been a very great treat to him.

Mr. LOCKE thanked Professor Williams for his admirable address and said he agreed with a good many things the Professor had stated. He also took the opportunity of thanking the members who had supported him in his position as a member of Council. He hoped he should be found able to do his duty during the years he had the pleasure of representing them.

Mr. MUNRO thanked the Professor for his very interesting and instructive address. As to sutures he had left them off altogether.

Mr. WM. WOODS.—As to the use of cocain being dangerous he used it regularly in firing horses. He injected about a drachm of solution in three or four different places in firing a tendon, and then with what was left of the solution he rubbed it on the leg with a tooth brush for two or three minutes, and ten minutes after that he commenced firing and there was no sign of any feeling whatever. He thanked Professor Williams for the interesting and useful address.

Mr. HUGHES wished to express his indebtedness to Professor Williams for the very instructive address.

Professor WILLIAMS said he should like to give an answer to one thing Mr. Faulkner said—that "in cutting" until there was a separation of the lamina, it was impossible for there to be a great amount of exudation. There was no space for it, but he stated he had specimens in his possession where the space was nearly half-an-inch in width between the wall and the pedal bone, containing nothing, the fluid exudate having escaped, and in the cases which terminated fatally, it would be found that there is excessive congestion of the great vessels, the blood coagulated within them so as to present a solid appearance. He was sorry that he could not assist Mr. Lawson in curing pumiced feet. He thanked his hearers very much for their kind vote of thanks and for the hearty manner in which they had received it.

Mr. E. FAULKNER proposed a vote of thanks to Professor Williams for his kindness in delivering such a talented address.

Mr. ALEXANDER LAWSON seconded.

Mr. LAWSON proposed a vote of thanks to the chairman.

Mr. E. FAULKNER seconded.

H. D. CHORLTON, *Hon. Secretary.*

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of the Association took place at the Grand Hotel, Birmingham, on Tuesday, August 13th, Mr. Wartnaby, Burton-on-Trent, presiding. There were also present—Messrs. Blakeway, Malcolm, Byner, Wilson, Birmingham; Green, Chambers, Dudley; Crowhurst, Leamington; W. Carless, Stafford; Beddard, Wolverhampton; Gooch, Stamford; Prickett, Walsall; Smith, Tunstall; Barling, Ross; Collett, West Bromwich; Kidd, Melton Mowbray; and H. J. Dawes, hon. secretary, West Bromwich.

Letters of apology for inability to be present were received from Professors Macqueen, McFadyean, Penberthy, Williams, McCall, Dr. Fleming, Messrs. B. Russell, T. Slipper, H. Olver, R. C. Trigger, W. S. Carless, F. W. Wragg, J. R. Green, and J. S. Barling.

The minutes of the previous meeting and the circular convening the present meeting were read by the HON. SECRETARY (Mr. H. J. Dawes), who also announced the receipt of acknowledgments from the relatives of the late Mr. Greaves, of Manchester, and the late Mr. Goodall, of Melton Mowbray, of the votes of condolence passed at the previous meeting.

Nominations and Election.

Mr. PRICKETT nominated for membership Mr. A. B. Forsyth, of Cannock.

The HON. SECRETARY (on behalf of Mr. John Blakeway, who was temporarily absent) nominated Mr. Simpson, of Maidenhead.

The HON. SECRETARY (on behalf of Mr. Carless, of Worcester) nominated Mr. Evans, of Stratford.

The above names will be submitted for election at the next quarterly meeting.

Mr. H. Kidd, of Melton Mowbray, was, on the motion of Mr. GOOCH, seconded by Mr. MALCOLM, unanimously accepted as a member of the Association.

Places of Meeting.

Mr. BARLING (Ross), in accordance with notice duly given, moved the following resolution:—"That all meetings of the Association shall be held in Birmingham, and the only exceptions shall be when the president, who may be resident elsewhere, shall desire to invite the Association to hold one meeting during his year of office in his own town." He said his only object was to

advance the welfare of the Association, and he thought the central position of Birmingham would enable them to obtain larger attendances.

The HON. SECRETARY begged to second the motion. He often received letters from members of the Association who could only attend Birmingham meetings.

Mr. GOOCH proposed as an amendment that the present rules remain in force. It was a question which cut both ways and some members could not attend because Birmingham was to them inaccessible. Besides, the more they moved about the district the more likely were they to rouse the interest of other members of the profession.

Mr. MALCOLM seconded the amendment being greatly in favour of the meetings being held in various towns.

The PRESIDENT supported the amendment. He admitted that the best meetings were held in Birmingham, because that was perhaps the most central town, but he had come to the conclusion that it was unfair to the outside members always to hold the meetings in the same place. Besides, it was quite open to them to hold every meeting in Birmingham if the majority of the members thought fit.

The resolution was negatived by an overwhelming majority.

New Tooth Shears.

Mr. JOHN BLAKEWAY exhibited a new pair of tooth shears, which he himself had just invented. He explained them in detail, and considerable interest was manifested concerning them.

Mr. CROWHURST gave formal notice that at the next meeting of the Association he should move that a pair of Mr. Blakeway's shears be purchased, and also that such further instruments be obtained as may in the meantime be considered desirable.

The HON. SECRETARY said he could personally testify to the admirable manner in which the shears worked.

Mr. BLAKEWAY said the shears were not in the market at present, but he was personally agreeable and would let the Association have a pair at the lowest possible cost.

Mr. SMITH said that the box in which the present tooth shears were sent out ought to be repaired as it was in a disgraceful condition. He moved that it be done.—Carried.

The Recent Visit of "The National" to Birmingham.

The HON. TREASURER (Mr. J. Blakeway) presented some accounts, relating principally to the expenses incurred through entertaining the members of the National Association on the occasion of their recent visit to Birmingham. They would, he said, be duly audited at the close of the financial year, but he wanted them to be paid at once—They were provisionally passed.

Mr. MALCOLM alluded to the reasonableness of the charges. Instead of their being heavy, as he for one fully anticipated, they were exceedingly moderate.

Mr. CROWHURST expressed himself in similar terms and added that several of the guests had declared themselves highly delighted at the hospitality of the Association.

This opinion having been endorsed by the remainder of those present,

The PRESIDENT, on behalf of the Reception Committee, returned thanks for the kind appreciation which had been shown of their efforts. They had been sufficiently rewarded by the success with which everything had been attended.

Another Acknowledgment.

Mr. BEDDARD said he desired to thank the Association for supporting his candidature for a seat on the Council of the College, and he could assure them that as long as he retained the position to which they had been good enough to elect him, he should endeavour to do his duty and attend the meetings regularly. At the present time there were no questions of vital importance engaging their attention, but he hoped at the end of his term of office to be able to leave a favourable impression and deserve a continuance of their confidence and support.

Mr. W. Carless, M.R.C.V.S., Stafford, read the following paper on

"DISTEMPER IN THE DOG."

Mr. President and Gentlemen,—When our much respected President asked me to read a paper before the Midland Counties Veterinary Medical Association during his year of office, I felt very much complimented, because I knew that he had only to make the request to many more capable members, as well as honorary associates, to obtain a paper or address of a much more interesting and instructive nature than anything I could produce. I decided that I would step out of the beaten track, and try to provoke a discussion on a subject that is a very important one, although not fostered or taken up by many members of our profession. That subject is "Canine distemper" or "Distemper in the dog."

When we take into consideration the enormous sums that are paid for dogs now, as compared with twenty years ago, and the great value that is placed upon them as progenitors and prize winners, both at home and abroad, and the great dangers they are exposed to in travelling and at exhibitions, I think it behoves us all to be well up in the detection and treatment of that very contagious and fatal malady, distemper.

Professor Williams defines arslupe as a "febrile disease," due to the operation of a morbid poison, occurring spontaneously from ordinary causes of disease, or as the result of contagion and infection, and known in almost all parts of the world. I cannot agree with the worthy Professor that it occurs spontaneously, simply because I have, during a close observation extending over thirty-five years, never seen a case which could not be traced to contagion or infection; of course I do not allude to a case that is brought to a show, or from a distance, because we should have no opportunity of tracing that to its origin, but keen observers will have noticed the fact that for two or three years a district will be free from the disease, although the number of dogs, young and old, remains the same and the surroundings as usual, when at last some travelling showman's or a lodger's dog comes to reside in the district for a day or two, and leaves behind him the virus of the disease.

The disease, in my opinion, may be more fitly described as a "Specific catarrh of the mucous membranes," affecting primarily those lining the air passages, fauces, and stomach.

Unfortunately, we have numerous and often very fatal complications. At least four of these are well described as the pneumonic, bilious, enteric, and nervous; any one of which is sufficient to kill, even when the best care and treatment is adopted. Now, why should we have these complications? I believe that most of them are due to bad treatment or no treatment at all, with bad surroundings, and that if the simple form of the malady were properly treated, the complications would very seldom occur.

All kinds and breeds of dogs are equally susceptible under the same circumstances, but we find in practice that the better bred animal and the exotic are the most liable to fall victims.

Distemper in the dog, like measles in the human subject, gives a certain immunity which is not complete. I have never seen a second attack within a

year, but after that time I am not surprised to see it. The incubative stage of the disease is from three to six days, depending upon the age and vigour of the subject.

Besides the complications I have mentioned, there are numerous sequelæ to this disease which give the owner immense trouble. These are shedding of hair, with irregularity of growth for a long time, pustulous eczema, affecting the skin under the belly and inside the thighs, weak eyes, and sometimes ulceration of the cornea from debility, deafness, due to perforation of the drum or to accumulation of wax, &c. All these things require the greatest care and good management, or your patient will not be restored to his pristine state.

Symptoms.—The first noticeable symptoms are lassitude, with slight cough, the patient coughing nine to ten times in quick succession and ending in a reach or slight attempt at vomition. Shortly, we notice the animal has slight rigours, breathing quickened, mucous membranes injected, eyes watery, frequent blowing of nose (this does not amount to sneezing, and I do not recognise sneezing as a symptom) muco-purulent discharges from nostrils, tongue dirty, with thickened mucous membrane about the throat, temperature high, with scanty urine, and irregular action of the bowels, appetite capricious, and when induced to take food is nearly always sick. This state of things will continue for some days, after which the poison will show signs of exhausting itself, and the patient point towards recovery, or some vital organ will be affected, and some one of the complications will appear. Putting these in rotation we will first consider *Pneumonia.*

This generally begins as bronchial pneumonia, and is ushered in with increased lassitude and prostration, a very painful cough, and the discharge from eyes and nose less. The animal will sit on its haunches, or loll against the wall until from exhaustion it falls on to its side and lies at full length, the extremities are cold, and the lips have a blueish tinge, with bloody discharge from nose.

I am of opinion that this form of the disease is nearly always through want of proper management, or from obesity. We seldom see it in kennels where a competent person is in charge, but more frequently in the lady's pet, which is stoved up in a high temperature and wrapped in rugs, and two or three times a day taken out into the cold for natural reasons.

Bilious.—This, in my opinion, is due to the thickened condition of the mucous membrane lining the biliary ducts, obstructing flow of bile into bowels and causing absorption into circulation. I feel sure that we may sometimes trace it to exposure to damp during the incubative stage of the disease, and congestion of the organ as a consequence. These cases are nearly always fatal.

Enteric.—This form is nearly always traceable to septic mischief, either from the decomposition of food, given indiscriminately, or from the licking into the mouth discharges from skin and nose, &c. The mucous membrane of the bowels soon becomes diseased when the system is so prostrated, and if not arrested the disease becomes pustulous, or ulcers may form giving rise to hæmorrhage. I consider this is a complication that is most amenable to treatment.

Nervous.—This is by far the most dangerous and fatal form, because when it begins the animal is so prostrate. We are often congratulating ourselves that the patient is making a good recovery, and are told by the nurse that "doggy is so much better to-day that it notices things and has taken a little food, and that there is not so much nasty discharge from the eyes and nose," but when we come to have a quiet look we observe some very tell-tale twitchings about the muscles of the forehead or face; these are the premonitory symptoms of epilepsy in distemper, and, if not combated at once, the patient either dies in great agony, or is left the subject of partial paralysis, or

of chorea. No breed of dog is exempt from this form of the disorder, but I have noticed that some breeds are more troubled than others, the collie, the setter, and the pointer being the most frequently attacked. Professor Williams says that convulsions of varying intensity, coma, paralysis, more or less complete, occur as primary symptoms. This, in my opinion, is wrong, as we never see brain disturbance in the first stages, unless it results from teething or the presence of worms in the bowels. The pathology of this form of the infection is the most obscure. We may know what the exciting causes are, such as over-feeding, or over-exertion during convalesence, but we do not know the exact condition of the brain and nerve centres immediately before the attack.

(*To be continued.*)

ADDRESS TO THE STUDENTS OF THE GLASGOW VETERINARY COLLEGE.

BY PROFESSOR MCKENDRICK.

THE formal opening of the Session 1895–6 of the Glasgow Veterinary College took place on Wednesday, October 16th, when Professor McKendrick, of Glasgow University, delivered the opening address. Mr. John M. Martin, Auchendennan, presided, and there was a large attendance, including Professor Owen Williams, Edinburgh, Professor Limont, the Rev. David Watson, and Bailie Graham.

Gentlemen,—Principal M'Call has asked me to address you on the occasion of the opening of a new session, and I need hardly say that I accede to his request with great pleasure. For many years I have taken an interest in the veterinary profession, from the time, over twenty years ago, when I lectured on physiology at the Royal (Dick) Veterinary College in Edinburgh, down to the period, from 1888 to 1894, when I acted as an examiner in physiology to the Royal College of Veterinary Surgeons. It has therefore been my good fortune to watch the progress of the veterinary profession during the last twenty-five years, to note the great changes that have taken place in the education of the veterinary student, to observe the increasing importance of veterinary inspection as a branch of preventive medicine, and to recognise the valuable additions made to medical science by veterinary physiologists and pathologists. I shall venture, therefore, on this occasion, to make some observations on these points, in the hope that I may be able to awaken your interest in the profession you have chosen by showing you what it is, how it has come to be what it is, and what are its duties and responsibilities to the public at large.

Medicine, or the healing art, in the broadest sense, deals with the diseases affecting living beings. All living beings, whether plants or animals, are liable to certain accidents and to certain diseases. When we closely examine the life-history of any living thing, we soon find that it has to maintain a struggle against many inimical conditions, and that other living things of a parasitic kind prey upon it. This is true of the humblest plant and of the infusoria of microscopic size that inhabit a drop of stagnant water, as well as of the tree of the forest, of the domestic animal in all his strength and beauty, and even of man himself. It is the function of medicine to aid the living being in this struggle for existence. This is the most comprehensive view of the art of medicine, and it is well to familiarise your minds with it from the very outset of your studies. It will show you that the distinctions we make of medical science as applied to plants, and to the domestic animals, and to human beings, are artificial ; and whilst they may be convenient in practice; they have no basis in fact. The processes going on in all forms of life are essentially of the same kind. This statement is true, not only of physiological processes, but also those spoken of as pathological.

It is curious to note how the human mind, in the acquisition of knowledge, varies in its methods. Science begins with the gathering of general ideas about things. The number of these accumulates until, by observing correspondences, the mind works out for itself general laws or principles that seem to it to be the regular forces. Then comes a time when there is greater specialisation, vast numbers of facts are gathered in, and around each department the mind constructs for itself artificial barriers. One branch of knowledge seems to be marked off from others by clear lines of division. Lastly, the mind again alters its method, and swings back to the clearer recognition of general truths. It is then seen that knowledge must be viewed as a whole; that the barriers we erected were artificial; and that throughout the whole range the essential phenomena are identical. In the history of medical science one can clearly follow these processes, and, at the present time, in the domain of biological science, the tendency undoubtedly is to take a broad and comprehensive survey of the whole field and to recognise that in the tissues of plant and animal alike we have to do with the same essential phenomena.

You have chosen as your vocation one department of the art of healing, inasmuch as the objects of your professional care will mainly be the domestic animals, but you will be engaged in the same kind of work as that which occupies the attention of practitioners who deal with human beings. The phenomena of disease are essentially the same in the two classes: the only difference lies in the value of the patient. I place this before you so as to give you a sense of the dignity and worthiness of your profession. If you have the same work to do (sometimes even more difficult work), as has to be performed by practitioners who deal with men, it follows that your education should be on the same lines and of a character as thorough and efficient.

Both human and veterinary medicine presents two practical aspects recognised by everyone, namely, curative and preventive. By curative we mean, of course, all the knowledge that helps towards the diagnosis and the treatment of disease. It does not imply that all diseases can be cured, because it is well known that, especially towards the close of life, the cure of the disease—that is—the complete restoration to health—is a physical impossibility; but we hold that it does imply the relief of suffering. The relief of pain can always be obtained, and I have often thought that this achievement, apart altogether from cure, is worth all the thought and labour that have been expended on medical science. But medical science is largely concerned in prevention; and here your branch of the profession has a highly-important part to play—a part that the public do not yet sufficiently recognise. It is becoming more and more evident that not a few of the maladies that are the scourges of the human race originate in the lower animals, and that if these maladies are ever to be stamped out, we will have largely to depend on the efforts of the veterinary practitioner. From this point of view the services you have to render to society can hardly be overestimated.

Education of the Veterinary Student.

After those general observations, perhaps you will allow me to say something regarding the course of education now required of veterinary students. I advert to this, not so much with the view of giving you information, because I have no doubt you have all studied the regulations of the Royal College of Veterinary Surgeons, but because I do not believe the public have any adequate knowledge of the course of study now followed by a student in a veterinary college. In the first place, after a fair preliminary examination, involving English, Latin, elementary mathematics, an optional language, and elementary logic, you will have to spend a year in the study of chemistry and elementary physics, biology (which includes elementary zoology and botany), and

elementary anatomy. This may be termed your training in general science. You should not regard this part of your work merely from a utilitarian point of view, because you cannot always connect this kind of information with the professional work in which you hope to be engaged. Nor should you look on these studies merely as methods by which your mental powers will be strengthened. The study of science will no doubt do this for you, but I have long held that the human mind is an instrument that can be trained and developed by many methods, and that no method has a great advantage over another. No; the real use of a scientific education, even of an elementary character, is to enable a man to know something about the world in which he lives, and something about the conditions of existence of the plants and animals that share this world with him. I hold that no man has been well educated who does not possess something of this knowledge. His mental faculties may be of the highest order, and these may have been strengthened and developed to their fullest extent by other studies than those of physical and biological science, but the absence of scientific knowledge will make it difficult for him to see the bearings of many questions in religion, philosophy, and social economics. One of the first conditions of a thoroughly healthy mental and physical existence is a recognition of the physical conditions under which we live. We should then be able, perhaps, to face some of the inevitable trials and disappointments of life with greater fortitude and composure, and we would be more likely to come to sound conclusions as to the proper treatment of others. A scientific education would also enable men to appreciate better the gains to be expected from the applications of science to technical pursuits. Our country is undoubtedly behind in this matter, and our manufacturers, especially in the chemical industries, run the risk of being driven out of the field by the far-seeing Germans if they do not bestir themselves. It is a suggestive question as to how far this failure to appreciate technical science, so evident even among our politicians, and certainly among our manufacturers, may be due to the somewhat one-sided education that has been given to the so-called educated classes in this country.

Having laid the foundations of general scientific knowledge, you will then pass on to the study of anatomy and physiology. In the first year you will have acquired the rudiments of anatomy, including the bones, ligaments, and joints, and you will now study more in detail the muscular and visceral anatomy of the horse, ox, sheep, pig, and dog. Your attention will, of course, be chiefly directed to the anatomy of the horse, but you will receive in reality a course of instruction in comparative anatomy. Along with this will run a course of study of physiology. These two departments of knowledge, anatomy and physiology, undoubtedly form the basis of all your future work, and I would strongly counsel you to be unremitting in your endeavours to acquire knowledge in the dissecting room, and at the practical demonstrations in histology and in physiology. While you must read books, try to get your information at first hand, and you will find that this kind of information will never leave you. Cultivate the habit of looking at the horse, for example, with the anatomical and physiological eye, so that you see his parts and follow his processes of nutrition and innervation as if he were semi-transparent. A knowledge of what may be called surface-anatomy, and the relation of parts of the skin to underlying organs, is of great value, and I believe it is too much neglected. You will be introduced into a wonderful region when you enter on the study of physiology, and you will find that your knowledge of physiological processes will link itself on with your studies in pathology. No one can enter on pathological questions without being well grounded in physiology. You will see, as you go on, that anatomy, or a knowledge of structure, physiology, or a knowledge of function, and pathology, or a knowledge of these processes that we regard as morbid, are only sections

of the same science. As I have said, your studies in physiology will be specially interesting. Not only will you learn about life, the formation and functions of tissues, and the general processes of nutrition, innervation, and reproduction, but you will be brought before special problems met with in the animals you have to study. The functions of the parts of the horse's hoof, the process of digestion in the horse, the marvellous process of rumination in the ox, are all special subjects of study. I know of no mechanism more wonderful than the foot of the horse, with its arrangements for distribution of pressure, and for nutrition. You will receive a wider view of physiology than is often presented to the student of human medicine, as your range will be more comparative and less special.

(*To be continued.*)

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

THE eighteenth general and fifth annual meeting of the Society was held at the Grand Hotel, Aytown Street, Manchester, in September last. Geo. Morgan, Esq., in the chair. Present: Messrs. E. Faulkner, T. Hopkin, A. Lawson, A. L. Butters, J. B. Wolstenholme, J. S. Carter, J. E. Scriven, A. L. Jones, H. Chorlton, J. Hall, J. K. Calderwood, and the Secretary.

Minutes of the last annual meeting were read and confirmed.

Letters of apology for non-attendance were read from Messrs. J. Clark, A. W. Mason, R. Reynolds, J. Abson, and A. J. Maccallam.

ADDRESS BY MR. G. MORGAN.

Gentlemen,—You are all well aware of the cause that places me in the chair on this occasion. Since our last annual meeting death has been busy in our ranks and some of our oldest and truest friends have fallen by the way. Amongst the rest two of our principal officers have been removed, and this annual meeting has been called a little earlier than usual so that these gaps may be filled up and the work they loved carried forward for the good of the profession. Closely connected as I have been with this Society since its commencement, now 30 years ago, you will believe me when I say that personally I have been much affected by the death of the President and Treasurer—they having all along been in the fore-front of the battle, sparing neither time nor money when they found that by the expenditure of either they could benefit the profession or extend the influence of the Society. Placed as they both were on the highest platform of the profession a fierce light beat upon them, yet that only revealed traits of the true gentleman, amiability, courtesy, and consideration for the feelings of others which endeared them to all with whom they came in contact; they were ever ready to hear and help the humblest. Mr. Taylor possessed, in addition, a gentleness of manner and a kindliness of heart around which the lives of his family must have been twined to such an extent as to make separation an agony. We shall all miss him greatly, but our loss must be swallowed up by a deep sympathy for the near and dear ones on whom the keenest edge of this deep sorrow has fallen :—

> Be not afraid ye waiting hearts that weep,
> For God still giveth his beloved sleep,
> And if an endless sleep He wills so best.

I do not intend to forestall the Secretary in alluding to the work done, or the Treasurer as to the amount of money in hand, but shall confine myself to a few general remarks on the past history of the Society and its prospects in the future. Thirty years ago in this city it was established, few of the

originators remain, at the close of five years we had enrolled 124 members; 76 of these are dead and others have resigned, so that of those who were members during the first five years only about 16 are now connected with the Society. When this Society was founded it had no funds, now we can boast of having nearly four thousand pounds, and it does seem strange that in a profession with upwards of three thousand members we should only number 165. If the funds go on accumulating they may in time become a hindrance in place of a help to the Society, and I would suggest that steps be taken to enlarge its borders as well as its responsibility. We have now in the profession some twenty veterinary medical societies, could not some scheme be devised by which these societies could be affiliated with this, and then entitle their members to the benefit of the benevolent branch, if not to the whole. I would suggest that societies affiliating with this Society should be represented on the Council by the President and Secretary for the time being, who should be representatives also for the district in which their society met. Of course the working out of this would require more consideration than we can bestow on it at an annual meeting, but if a suggestion can be entertained that the Council be empowered to consider the matter and present a report to the next annual meeting for discussion and adoption, or otherwise, I shall be very pleased to propose it, and in the meantime any proposals from outsiders will be favourably entertained. We are strong enough to assist all our own members, and are willing to help others, but we will not be told by anyone of them that we must do so and so. Thirty years' experience have told us that our rules are practicable and our Society a success, and although we may not have reached the sacred height of perfection our aim is in that direction and our motto "Onward."

The SECRETARY reported that during the year 12 new members had been enrolled, but as against that 12 names had been crossed out in consequence of arrears of subscriptions and death.

The Council have had two cases under their consideration, the first being a claim of over £60 which the Council, after due consideration, thought ought not to go to court, a small deputation waited upon the plaintiff, and the matter was eventually settled for £25 amicably to all parties. The second case is still in abeyance.

There has also been a good deal of correspondence with one or two other members in which claims are threatened, but by the firm stand made by the veterinary surgeons in question, having the full force of the Society at their back, cases have not been pressed, thus proving the need and usefulness of the Society.

We have as a body suffered great losses during the past year, several of the old and esteemed members having joined the great majority. I refer more especially to Mr. P. Taylor and Mr. T. Greaves, both of whom laboured most incessantly for the good of the Society for the last 30 years. At the last Council meeting a vote of condolence was passed to the relatives of the above-named gentlemen. We have now 160 members.

Mr. FAULKNER, the acting treasurer, reported that the subscriptions and entrance fees from January 1st to September 13th amounted to £79 3s. 6d., amounts owing by 34 members being £17 7s. Cash in bank (defence fund), £480 18s. 3d.; cash in bank (benevolent fund), £517 9s. 1d.; amounts invested (benevolent fund), £2,800. These accounts have been audited up to date in consequence of the death of our late treasurer, Mr. Greaves, but the usual yearly audit will take place at the end of the year, when each member will have a copy forwarded.

It was resolved that a letter be written to Professor Williams thanking him for accepting their nominee for a free studentship, and should be pleased to hear how the student in question is progressing.

After a discussion it was resolved that a small committee be formed to take into consideration the matter of finance and benevolence, and report to the next annual meeting.

The committee appointed were:—Messrs. W. A. Taylor, E. Faulkner, A. Lawson, and J. B. Wolstenholme.

The following officers were appointed for the year 1896:—

Patron—General Sir Frederick FitzWygram, Bart., M.P.

Trustees—Messrs. W. Whittle, T. Hopkin, R. S. Reynolds, and John Lawson.

President—George Morgan, F.R.C.V.S., Liverpool.

Vice-President—W. A. Taylor, Esq., F.R.C.V.S., Manchester.

Treasurer—Ed. Faulkner, M.R.C.V.S., Manchester.

Honorary Secretary—Sam. Locke, M.R.C.V.S., Grosvenor Street, Oxford Street, Manchester.

Council—J. S. Carter, Bradford; A. L. Butters, London; Tedbar Hopkin, Manchester; A. Lawson, Manchester; A. W. Mason, Leeds; R. S. Reynolds, Liverpool; J. E. Scriven, Tadcaster; Henry Howse, Lincoln; R. C. Trigger, Newcastle-under-Lyne; W. Williams, Edinburgh; J. B. Wolstenholme, Manchester; W. Woods, Wigan.

Auditors—Messrs. Butcher, Litton, and Pownall, Manchester; and J. Wolstenholme, Manchester.

SAM. LOCKE, *Hon. Secretary.*

THE MINISTER OF AGRICULTURE IN EDINBURGH.

THE Right Hon. Walter H. Long, President of the Board of Agriculture, paid a visit to Edinburgh on the 23rd October in his official capacity for the purpose of meeting representative bodies in connection with questions relating to his Department. At noon the right hon. gentlemen received a deputation from the Royal Scottish Arboricultural Society, when the views of that body upon various points connected with forestry were submitted. Later in the afternoon he was present at a conference of agriculturists from all parts of Scotland, when members of the Scottish Chamber of Agriculture and others discussed, among other matters, the amendment of the Agricultural Holdings Act and the scheduling of tuberculosis as a contagious disease. In the evening Mr. Long was the guest of the Chamber at a dinner in the Waterloo Hotel.

Conference of Agriculturists.

A conference promoted by the Scottish Chamber of Agriculture was held at three o'clock in the hall of the Highland and Agricultural Society, George IV. Bridge, in order that the views of the Chamber and of representative agriculturists from various districts of the country might be laid before the President of the Board of Agriculture on questions in which they were interested. There was a large attendance, many local agricultural societies having sent delegates to the conference. Mr. Long was again accompanied by Sir Jacob Wilson, director of the Land Department of the Board of Agriculture. The Master of Polwarth, president of the Chamber, occupied the chair, and among those present to meet the Minister of Agriculture were the Earl of Dalkeith, Sir Mark J. Stewart, M.P.; the Hon. Thomas Cochrane, M.P.; Mr. Munro Ferguson, M.P.; Mr. James M'Killop, M.P.; Colonel Dudgeon of Cargen, Mr. John Gilmour of Montrave, Mr. James Hope, East Barns; Mr. John Scott of Gala, Mr. John Clay, Kerchesters; Mr. John Speir, Newton; Mr. James Biggar, Grange, Dalbeattie; Mr. Andrew Hutchison, Beechwood, Perth; Mr. Scott Dudgeon, Longnewton; the Rev. John

Gillespie, Mouswald; Principal Williams, New Veterinary College, Edinburgh; Professor Wallace, Edinburgh; Professor Wright, Glasgow; Mr. Walter Elliot, Hollybush; Mr. James I. Davidson, Saughton Mains; Mr. John Mitchell, Fliskmillan; Mr. T. M. Skirving, Niddrie Mains; Mr. John Dobbie, Campend; Mr. James Macdonald, secretary of the Highland and Agricultural Society; Mr. James Wylie, secretary of the Edinburgh Agricultural Society, &c. The following agricultural societies were either represented at the conference or wrote expressing approval of its objects :—

Aberdour (New) Agricultural Association, Annandale (Mid) Agricultural Society, Arbroath Farmers' Club, Arran Farmers' Society, Avondale do., Banffshire Central Farmers' Club, Buchlyvie and Gartmore Agricultural Society, Cambuslang, Blantyre, and Rutherglen do., Carmichael do., Cumbernauld do., Clackmannanshire Union do., Cumnock (New) Farmers' Society, Dunoon Agricultural Society, Eaglesham do., Eskdale and Liddesdale do., Formartine do., Fortrose Farmers' Club, Forth Agricultural Society, Galloway Cattle Sales Association, Inverness Farmers' Society, Kintyre Agricultural Society, Kilmarnock do., Kirriemuir do., Lanarkshire Farmers' Society, Liddesdale Agricultural Society, Tarbolton Farmers' Society, Teviotdale (West) Agricultural Society, Bathgate do., Spey, Avon, Fiddichside Farmers' Club, Dumfries and Galloway Union Agricultural Society, Galashiels Farmers' Club, Fife do., Dalrymple Farmers' Society, Wigtownshire Agricultural Association, Stranraer and Rhins of Galloway Agricultural Society, Lower Annandale do.

The CHAIRMAN, before explaining the order of the proceedings, expressed their gratitude that Mr. Long had been able to come there and meet with such a large and representative gathering of Scottish agriculturists. It was the first official visit paid to Scotland by a President of the Board of Agriculture, and he hoped Mr. Long would not suppose that this large attendance implied that they in Scotland thought that the Board of Agriculture or the Government could do everything to remedy the difficulties under which agriculture at present suffered. They knew that after all the Government could not do everything, and that they must very largely rely upon themselves, but none the less they felt that there were certain subjects in regard to which the Government might be able to help them, and in regard to which they thought it desirable that information should be laid before the President of the Board of Agriculture. It was not proposed to discuss all the questions on which the Chamber of Agriculture had petitioned Parliament, because they believed that in regard to many of them the mind of the Government was probably made up already, and they knew that Mr. Long had ample information on many of the points raised. Among these questions, which he need simply enumerate, were the lending of money at a low rate of interest for agricultural improvements, railway rates, the marking of foreign meat, and the inequality of taxation. The last-mentioned was a very important matter, as they felt that the land at present bore a very unfair share of the burden of taxation, more particularly of local rates. He found in his own parish that the land was paying 2s. per £1 of local rates, which was a very heavy tax, and out of proportion to the general wealth of the country.

The SECRETARY (Mr. Isaac Connell) having read the list of societies represented at the conference, or who had written expressing approval of its objects, the CHAIRMAN said that list would show that the objects of the conference met with the general concurrence of agricultural societies throughout the length and breadth of Scotland.

Principal WILLIAMS, of the New Veterinary College, Edinburgh, spoke first on "Tuberculosis."

Without discussing the fact of the transmissibility of tuberculosis from cattle to various other animals and to the human being, and not disputing the

conclusions founded upon most reliable data that, during the last 30 years or so, it has increased to an alarming extent amongst the cattle of this and other countries, one is compelled not only to ask the Government to deal with it in terms of this motion, but also, how is the evil to be entirely suppressed without an immense expenditure of money.

Is it to be dealt with like pleuro-pneumonia, by the slaughter of all diseased and all incontact animals, or are we to follow and take a lesson from Denmark, and endeavour gradually to eliminate tuberculosis without having recourse to such a costly measure?

It will be remembered that in 1888, the Veterinary Department of the Board of Agriculture, presided over by Professor Brown, recommended to the Government that "Tuberculosis be included in the Contagious Diseases (Animals) Acts, for the purpose of slaughter and compensation, for the seizure and slaughter of diseased animals exposed in markets or fairs." These recommendatious were not adopted, mainly owing to the then difficulty of diagnosing the disease in apparently healthy cattle, and to another serious difficulty, in compensating for the seizure and slaughter of pedigreed stock. The Committee went even further, and recommended that "to breed from animals known to be tubercular, should be made an indictable offence." This last recommendation would not be expressed at the present time, as I will prove to you immediately that the danger from this is not so great as was then supposed.

In 1890, a Royal Commission was formed under Lord Basing, and, partly through the death of the president, the report was not published until the spring of this year, 1895. The investigators, sad to relate, from the few data they had to go upon in the United Kingdom, were compelled to refer to the Continent for statistics, as to the prevalence of the disease, and where it has been closely studied and guarded against, and they testify in their report that no records exist to be compared to those supplied by Copenhagen and Berlin. For four years, 1890 to 1893 inclusive, the percentage of tuberculous animals found when slaughtered at the Copenhagen abattoirs for food, were 17·7 per cent. for oxen and cows; 15·3 for pigs, and only 0·2 for calves and 0·003 for sheep; at Berlin, 15·1 for cattle, 1·55 for swine, 0·11 for calves, and 0·004 for sheep. You will see from these statistics that the disease is rare in calves, and more rarely so in sheep. But England and Scotland have indirectly given valuable information upon this point, for in 1891, nearly 10,000 animals (of which only 800 were ill), were slaughtered under the pleuro regulations, 1,260, or 12¼ per cent., were found tuberculous. In Edinburgh, the percentage was much higher than this, for out of 300 slaughtered, 120, or 40 per cent., were found tuberculous. Mr. Speir will tell you what he heard about its prevalence in Ayrshire and Wigtonshire.

Unfortunately, the Royal Commission, after being so long before submitting its report, suggests no methods for dealing with the disease, but confines itself to pointing out the dangers to human life when tubercular meat and milk are consumed, without the meat being properly cooked and the milk heated to the boiling point, conclusions which were previously well known.

Seeing that there is such a high percentage of tuberculosis where, often, none is suspected, it would be a stupendous task for the Government to order the slaughter and pay compensation, and particularly so if the carcases were destroyed, even for diseased animals only, and if the incontact animals, as under the pleuro rules, were also to be slaughtered the compensation would be too great a task for any government to perform. The loss would, of course, be diminished if the carcases of those having local tuberculosis were allowed to be sold for human consumption. Tubercle being seldom found in the flesh, and the abolition of the unjust procedure followed out by some anitary authorities, namely, that of seizing and destroying the carcases of all

tuberculous beasts no matter how pure and good the meat might be. This is a great injustice to the butcher who, according to present usage, has to bear all the loss besides running the chance of prosecution and fine, notwithstanding the many representations which have been made to have this custom altered.

Now you will naturally ask me for some suggestions as to how to deal with the question. A few years ago I would have told you that I could see no solution, that the diagnosis of the disease was an impossibility owing to its frequent presence without outward signs, but since the discovery and application of tuberculin, discovered by Koch, the detection becomes an easy matter, as proved by experiments in many parts of the world.

And with all due deference I beg to submit the following schemes for consideration.

1st. *For dealing with non-breeding cattle.*—When tuberculosis is suspected in an animal, it and all incontact cattle should be subjected to the tuberculin test, and that all in which the reaction followed, if in good condition, be slaughtered, and the beef if found fit after careful examination by a duly qualified veterinary inspector, be sold for human consumption. That the animal be valued prior to slaughter, and that the difference between the value of a milch cow and as beef be made up by the Government as in pleuro-pneumonia, or perhaps divided between Government and owner.

That all piners, wasters, reacting to the test, should be slaughtered and their carcases at once destroyed, no compensation being given, and that neglect to report such cases to the proper authority be considered an indictable offence.

That all animals in which the tuberculin reaction indicated that they were affected, but apparently showing no signs of ill-health, if not fit for slaughter, should be prepared for the butcher and slaughtered when fit, being in the meantime removed and isolated from those in which no reaction had taken place. That the healthy stock be again tested aud the same rules applied.

2nd. In dealing with breeding stock I can do no better than quote from Nocard who says, "all those engaged in agriculture in breeding, rearing. feeding or fattening ought to carry out each for himself the prophylaxis of the disease. Each of them is directly interested in it. The methodical use of tuberculin, by denouncing the sick animals at the outset of the disease, permits one to isolate them and to protect the sound animals from all danger of contamination.

As the young animals mostly escape the infection, breeding would not be seriously interfered with, and the vacant spaces would be filled in a few years. Of course, a farm once made healthy, ought to be protected from re-infection. To effect this, it would be sufficient to introduce into it no new animals without having them previously tested with tuberculin.

Professor Bang, of Copenhagen, has a similar scheme, and has, according to his last report, carried it to a successful issue. He proceeds as follows :—

The whole herd is tested with tuberculin, and thus divided into a healthy and a tuberculous section, which are separated from one another, and have separate attendants. The healthy section is tested every six months with tuberculin, and any animals which react are at once removed to the tuberculous section. Those animals of the tuberculous section which are obviously affected, are got rid of ; but those which are apparently healthy, are kept and used for breeding purposes as long as may be convenient, and as they will generally be fattened for slaughter before the disease is far advanced, the total condemnation of their carcases as butchers' meat will not, as a rule, be necessary. The calves of the tubercular section are removed to the healthy section immediately after birth, and are fed for the first day on colostrum,

which has been heated to 65° C., 149° Fah., and subsequently on boiled milk, this boiled milk being from tuberculous cows.

At first these calves were kept in separate boxes, and only added to the sound section when they had successfully undergone the tuberculin test, but he now thinks that they may with safety be removed to the sound section immediately after birth, and wait till the time of the general half-yearly testing with tuberculin.

He relates the following experiment at the farm of Thurebylille:—In Zealand, he in May, 1892, tested the whole herd consisting of 208 head. Although they all seemed healthy, and there had been no special amount of infection suspected, 80 per cent. of the milch cows, and 40 per cent. of the bulls, heifers and calves reacted. While the herd was out at grass, the two sections were kept apart, the byre was thoroughly disinfected and divided into two parts by a wooden partition, covered on one side with felt. A separate staff was told off to look after each section, with orders not to go from one to the other. It was decided to test the healthy section twice a year, and the calves of the tuberculous section as soon after birth as possible.

In October, 1892, the healthy section consisted of seventy animals, of which seven reacted and were removed to the tuberculous section.

In May, 1893, the healthy section consisted of 103, of which ten reacted and were removed to the tuberculous section. After this, the isolation of the two sections was more vigorously enforced.

In October, 1893, the healthy section consisted of 107, of which one reacted.

In May, 1894, out of 122, two reacted.

In October, 1894, out of 119, one was suspicious, and in May, 1895, the healthy section consisted of 136, of which none reacted. The few animals bought during these three years were tested before being introduced into the herd. Most of the calves born during this period, were the calves of tuberculous cows, but none of them have developed tubercle, with the exception, perhaps, of one calf which, when tested when 6½ weeks old, gave a reaction.

These results seem to show that a healthy stock may be had from a tuberculous one by the simple precautions of separating the healthy from the infected, and boiling the milk of the tuberculous cows.

In carrying out these procedures, I think the Government might safely devote an annual sum of money to assist cattle owners in suppressing so great and increasing an evil as tuberculosis; and, being of opinion that the schemes are tangible and reasonable, I now beg to move that tuberculosis be included in the statutory schedule of infectious diseases, and that compensation be paid to the owners of cattle affected with tuberculosis when such cattle are slaughtered in the public interest.

Mr. JOHN SPEIR, Newton, Glasgow, in seconding the motion, expressed the view that they were indebted to the Royal Commission for proving to them the poisonous character of the milk from a cow infected with tuberculosis. Speaking of the tuberclin test, he argued that the Government should step in and compel farmers to adopt it, and give compensation for animals that required to be slaughtered. If they did not, those who had adopted the test would send throughout the country their infected cattle, and do more damage than could be calculated.

The motion was agreed to.

Mr. LONG said one or two speakers had made reference to the Government, of which he had the honour to be a member. Filling such a position as he did, it must be of inestimable advantage to him to be brought into such close contact with those concerns over which he had to watch and to protect to the best of his ability. He had noticed that in the course of the speeches which had been delivered one or two references had been made to the Government of which he had the honour at present to be a member, and he was very glad

to find that in one quarter of the room they were regarded as a very happy family of brothers. He would, however, remind the gentleman who made use of the phrase that although he had not exaggerated in the smallest degree the friendly and affectionate family relations which governed them as a Government, yet in the history of families in this country there had been occasions when even brothers disagreed as to the relative share each should have in the family property. Consequently it must not be taken as any indication of want of harmony on their part if any individual member of the Government could not act as if he were the sole member of the Government of the day. At the same time he had been reminded by one gentleman of a fact which certainly came to him as news, that the present Government were pledged to the hilt to remedy agricultural depression. That was a novel statement to him, and one not altogether devoid of interest. All he could say was that he hoped the present gathering had not been brought together under the impression that that was the condition of things in regard to Her Majesty's Government, because if so they had been brought there on false pretences. Her Majesty's Government had not pledged themselves to relieve agricultural depression, nor had they suggested that it was within the power of a Government so to do. The causes which had produced agricultural depression had been far too widespread, had been in existence far too long a time, and were due to causes far beyond the power of any Government to relieve by immediate legislation. What they were prepared to do was, so far as they could, to simplify the conditions under which the agriculturists of the country were called upon to prosecute their calling, and, if possible, to place them in a position which would enable them to carry it on a little more profitably than unhappily it had hitherto been. He needed not, in addressing an audience of practical men such as they, to preface his remarks by any observations as to the limits within which he was enabled to make any promises to them. He spoke, of course, his own views as the minister responsible for agriculture, but betore he could embody those views in a bill and present it to Parliament, he should require the consent of his colleagues, and therefore, until they as a whole had decided what would be the legislation that they should propose to Parliament and the steps they should take, he could only indicate as briefly as possible which were his own views, and tell them as clearly as he could what would be the course that he should be prepared himself to take. He would deal with the subjects exactly as they had been brought before him. The first subject—that of tuberculosis—had been referred to by two gentlemen, Professor Williams and Mr. Speir, who spoke upon it in very practical and brief speeches, as one of leading importance. He might remind them of the fact that, as the law at present stood, the Department over which he was called upon to preside had no right or power whatever to interfere to deal with tuberculosis. At present animals were not slaughtered by the Government for tuberculosis. The process which took place was that carcases when slaughtered and found to be diseased were seized because they were injurious to human life. The suggestion was that the Board of Agriculture should exercise the power which it undoubtedly possessed, and should include that disease in the schedule under the Contagious Diseases (Animals) Act. They had had views upon a variety of subjects. One gentleman, in seconding Sir Mark Stewart's proposal, reminded them that the amount of money which was placed at the disposal of County Councils for aiding practical education had been materially decreased this year in consequence of the inroads made on their local taxation by the demands for swine fever. That was a very pregnant remark, and was not to be lightly passed over; because that was to be the effect of adding to their compensation fund the enormous sum which would be required if they were to deal with tuberculosis in a determined manner, and pay compensation for all

those animals which it was proposed they should deal with? The suggestion of Professor Williams, coming from such a high quarter, would receive his careful and respectful consideration; but he himself had almost unconsciously indicated many difficulties in the way of such a scheme. An essential part of the proposal was that this valuable discovery of the tuberculin should be made use of by the State; that the cattle should be isolated, the unsound being separated from the sound; and that then they should proceed with the necessary corollary of gradual destruction and compensation, either paid in whole by the State or divided between the State and the owner. It was all very well to talk to the large farmer, with ample accommodation, about separating the unsound from the sound cattle; but in a country like this, covered with small farms, any attempt at such a system of isolation would be doomed to failure. He was not condemning this proposal. There could be no doubt that the prevalence of that disease formed a very serious element in the condition and health of the herds of the country, and there was no doubt of its infectious character and of its transmissibility to others by the food of the animals. It was a question of such serious import that no Government could pass it by, and he was at present engaged in most carefully considering whether it was possible for anything to be done, either on some such lines as were sketched by the mover of the resolution, or by establishing some tuberculin station and affording facilities for the trial of that great discovery, in order that there might be some small movement made in the direction of dealing with that disease. He hoped, however, they would not disguise from themselves the fact that to suggest payment of compensation for the slaughter that would be necessary if they were going to exterminate the disease by slaughtering the animals that were to be used for breeding purposes, was to open a very large question, involving a very large expenditure of money. It was a question upon which he was to confer with the President of the Local Government Board (Mr. Chaplin), and if they failed to satisfy the demands of the stockowners of the country it would not be from want of any desire on their part to do all that was possible in their interests. His friend Sir Mark Stewart had condemed the administration of the Swine Fever Act. But he would remind him that when Parlia- resolved to deal with swine fever itself, instead of leaving it to the Local Authorities, new machinery had suddenly to be brought into operation and many inspectors appointed, and, no doubt, some mistakes had occurred at the commencement. The test of that policy, however, lay in its results, and he held in his hand the very latest returns, from which he found that in England the condition of things was by no means so satisfactory as could be desired, but in Scotland it was extremely satisfactory. It showed—The number of animals that had died of swine fever, none; the number of cases reported affected, 4; reported to be suspected but found free, 3; leaving only one case actually found to be infected. To pass from that to the suggestion which had fallen from Sir Mark Stewart, that the President of the Board of Agriculture should come every year and have a conference such as that, he might remind them that while he could not make any promise which would bind his successors, the experiment had been most agreeable and most helpful to him, and so long as it was his privilege to fill the position he now occupied, it would give him great pleasure to accept the invitation, if it was offered, to join in a practical conference with the Scottish agriculturists upon matters which interested them.

Chamber of Agriculture Dinner.

The dinner, at which Mr. Long was the guest, of the Scottish Chamber of Agriculture in the evening, took place in the Waterloo Hotel, Waterloo Place, and was attended by about a hundred gentlemen. The chair was occupied by

the Master of Polwarth, the president of the Chamber; the croupiers were Mr. Andrew Hutchinson, of Beechwood, and Mr. John Mitchell, Fliskmillan, Cupar-Fife, and among those present were the guest of the evening, the Hon. Thomas Cochrane, M.P., Sir Mark J. Stewart, M.P., Mr. James M'Killop, M.P., Colonel Wauchope, Sir Jacob Wilson, Mr. James Hope, Eastbarns; Major Sprot, of Garnkirk; Colonel Dudgeon, of Cargen; Principal Williams; Mr. John Clay, Kerchesters; and Mr. Isaac Connell, the secretary of the Chamber of Agriculture. After the loyal toasts had been given by the Chairman, Colonel Wauchope replied for "The Army, Navy, and Reserve Forces," and Principal Williams replied for Veterinary Science.

THE INTERNATIONAL AGRICULTURAL CONGRESS.

THE Agricultural Congress, which concluded its meetings last month at Brussels, was the third of a series organised by the International Agricultural Commission, founded in Paris in 1889, at the time of the Universal Exhibition. The Commission aims at prosecuting inquiries of general interest during the intervals between the congresses, and was able at Brussels to record, as one piece of work, the international convention as to the protection of birds useful to agriculture, which was held last June in Paris, and which it claims as the outcome of a resolution passed at its previous congress. There can be little doubt that, as the English delegate, Mr. Ernest Clarke, observed in his speech at the banquet of the congress, international gatherings, such as these, enable nations to better understand each other's methods, and contribute to the *entente cordiale* of agriculturists in different parts of the world. They afford occasion, moreover, for the summing-up of experiences in the papers and reports contributed to the sections, and these are of substantial value afterwards, in their printed form, for purposes of reference.

To a large extent a congress on agricultural matters must, however, necessarily take its tone and colour from the country in which it is held, and thus the *vœux* and resolutions of the sections at Brussels relate chiefly to matters which are distinctly Belgian in character. But to this general rule there were two exceptions of importance. In the section on the currency question, presided over by Count Kolowrat, of Bohemia, a remarkably able and comprehensive report by M. Allard, formerly Director of the Mint at Brussels, and an ardent bimetallist, was discussed with animation for two days, and at a general meeting there was only one speech—by M. Strauss, of Antwerp—in opposition to the following resolution:—"That all agriculturists in every country should use every means in their power to influence their Governments to invoke the meeting of an international monetary conference, and to assist such conference by their support, in order to establish a bimetallic international understanding, or, at least, to restore silver to its former monetary position; this with a view to arrest the agricultural crisis and the monetary crisis of depreciation in prices." This resolution was supported by speeches of representatives from Austria, Denmark, Russia, Roumania, and England (Mr. Granville Smith, one of the honorary secretaries of the Bimetallic League), and was declared carried, in a full meeting, with only one dissentient voice.

The other noteworthy feature was an address by M. Nocard, the famous veterinarian of Alfort, on the subject of tuberculosis, in the course of which he combated the theory of the hereditary character of this malady. For over an hour the learned professor held the audience spellbound as, without any notes and in clear and resonant tones, he expounded his views upon the subject. The resolution which he proposed, "That the systematic employment of tuberculin is the best means of securing the prophylaxis of tuberculosis," was accepted by the congress without dissent.

Amongst other subjects of general interest were several papers on agricultural credit associations, one by Dr. Petermann, the Professor of Chemistry at the Agricultural Institute at Gembloux, on the legal control of adulterations of feeding-stuffs, and one by Professor Leplae, of Louvain, on agricultural motors, in which reference was made to the rapidly-increasing employment of petroleum engines for farm purposes. A resolution of undeniable importance was one which recommended the organisation of a general inspection of meat sold for human food. It appears that such inspection is already in force in Belgium and works satisfactorily.

The International Commission, with whom rests the decision as to the place of holding future congresses, has practically decided to accept the invitation of Hungary to hold the next Congress at Budapest in 1896.

CONTAGIOUS DISEASES ANIMALS ACT, 1894.

COMBINED SUMMARY OF RETURNS for the five weeks ending 21st September, 28th September, 5th October, 12th October, and 19th October, 1895.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Anthrax.	Glanders (including Farcy).	Rabies.	Foot-and-Mouth Disease.
None	*Slaughtered.* Diseased, etc. 9676 Died 1485 Suspected 193 Total 10,354	Fresh Outbreaks 23 Animals Attacked 27	Fresh Outbreaks 87 Animals Attacked 132	*Killed.* Dogs 38 Swine 1 *Died.* Dogs 10 Sheep 6 Horses 1 Total 56	None

SCOTLAND.

None	*Slaughtered.* Diseased, etc. 166 Died 15 Suspected 14 Total 195	Fresh Outbreaks 6 Animals Attacked 9	Fresh Outbreaks 2 Animals Attacked 10	None.	None

IRELAND.

None	*Slaughtered.* Diseased, etc. 174 Died 86 Suspected 395 Total 655	None	None	Dogs killed 44 Cattle ,, 7 Horses ,, 1 Swine ,, 2 *Died.* Dogs 3 Cattle 8 Swine 1 Horse 1 Ass 1 68	None

LOUIS PASTEUR AND HIS WORK.

BY ONE WHO KNEW HIM.

ONE of the greatest men of the day has passed away. Pasteur, the great scientist, is dead. Every medical man throughout the length and breadth of Europe will mourn his loss; for medical science owes much indeed to the illustrious *savant* who died on Saturday near Paris. Born in 1822, Pasteur was by no means an old man—indeed, he was only 73; but to look at him, and speak to him, he appeared 10 or 20 years more.

It was in the year of the great Exhibition (1889), that I had the good fortune to meet M. Pasteur. He was a little man, thick set, with an extremely clever head, and a very kindly expression in his eyes. Owing to a paralytic stroke a few years before, from which he had partly lost the use of one leg, and required to lean heavily upon a stick, he dragged one foot so badly that he could only walk slowly, and even then was quite lame. This same stroke had also affected his mouth, and it was sometimes a little difficult for a foreigner to understand exactly what he said. These two slight afflictions are what made him appear so much older than he was, for slow, deliberate speech is generally the acquirement of age. Added to this, he was a very quiet man, extremely reserved, and always led the life of a hermit. He never cared for society, and very seldom appeared in public; he lived in his suite of rooms in the institution, a comparatively poor man. His wants were very simple. Three daughters died, but one lived with him and his wife; while his only son, Jean Baptiste, is secretary to the French Embassy at Madrid. This partial paralysis was entirely due to overwork and overstrain, for during the years that he was leading up to his famous discoveries he spent long and anxious hours in the fœtid atmosphere of the laboratory; and only those who have worked amongst such experiments know the noxious gases that escape, the intense heat that is often required, and the long and strenuous watching that is sometimes necessary. Years and years of patient labour were at last acknowledged, and finally the marvellous "Institute Pasteur" was erected for this great man to continue his research work.

The "Institute Pasteur" is the most wonderful scientific laboratory in the world. The building, which is situated far from the fashionable world in the Rue Dutot, resembles in appearance a well-appointed hospital, being clean, light, and airy, with wide passages and large windows. One portion was set apart for the dwelling of this remarkable man of science, so that he literally lived in the midst of his work. The edifice was built for M. Pasteur by international public subscription, England being one of the few countries that did not subscribe.

The French State, which has always been noted for its appreciation of science, in the case of M. Pasteur held out an unusually generous hand, otherwise, probably, inoculation for hydrophobia might never have been discovered, for experiments are costly, and necessarily numerous, and M. Pasteur, not being a man of large means, if he had been hampered by the worry of expense at every turn, could never have accomplished such an enormous amount of research with such satisfactory results. So anxious was he for others to benefit by his experience, that his large laboratory contains fourteen tables, at which are found students of all nationalities and ages, from twenty-five to fifty, some of them men who have already made their mark in science. To these students no charge is made beyond the price of the materials they use; and every facility for scientific research is provided.

The laboratory is beautifully clean and well arranged, each worker having his large table fitted up with gas jets, washing, carbolic apparatus, chemical stands, cupboards, &c., while every kind of heating, freezing, water, or disinfecting machine is ready for use.

When one speaks of the Institute Pasteur, it is a mistake to imagine that it is an institution limited to the consideration of the rabies question alone, for, on the contrary, although the cure of rabies and cattle plague may be said to have been the chief objects of study, the bacteriology of every febrile disease affecting the animal kingdom forms part of the investigations conducted in the laboratory; consequently, it appeals to our wider sympathies, in so far as the welfare of all domestic animals are also considered.

As rabies is, perhaps, of most public interest, I will give a few statistics which originally appeared in "Murray's Magazine" from my pen regarding the fatality of this disease, with and without inoculation, which may surprise some of my readers. M. Pasteur, after his marvellous discoveries of germs of ferments and chicken cholera, turned his attention to the saving of human life; and as hydrophobia was not only a terrible disease, but one for which no remedy was known, he naturally set himself to work to discover its origin and cure. By stamping out or curing the disease in dogs he hoped to be able to lessen the danger to human life.

Many years of labour proved to him that by inoculation he could give the disease to, or cure it in, a dog; but it was not until July, 1885, that the experiment was tried on a human being.

The first patient was a small lad. He had been severely bitten in some dozen places—on the hands, arms, and legs, and his mother, a simple peasant, brought him from Alsace, and asked M. Pasteur to do the same to her son as she heard he "did to dogs to prevent their getting hydrophobia." Pasteur hesitated; but having procured medical advice, all of which concurred as to the impossibility of the child's recovery, he (not being himself a doctor) let his surgeons inoculate the boy, which operation was repeated fourteen times, on two occasions twice in twenty-fours, so as to accomplish the task as quickly as possible. The child has never shown symptoms of hydrophobia, though it is now several years since he was treated, and he is fast growing to manhood.

The large outer hall of the institution by eleven o'clock contained eighty-nine persons, composed of all classes, all nationalities, and all ages, who had come to be inoculated (free of charge), having previously had the misfortune to be bitten by some rabid animal. On the right hand of the hall is a regular office, in which every case, with all particulars, is most carefully registered.

The cases are divided into three distinct groups: 1st. Patients bitten by dogs supposed to be mad; 2nd. Patients bitten by dogs certified to be mad; 3rd. Patients bitten by dogs proved to have been mad by subsequent inoculation.

After the patient has furnished every possible particular, he crosses the passage to a small room on the left, where the inoculation is performed. There sits the operator, who is assisted by a doctor, a nurse, and a clerk, furnished with full particulars, and the number of each case.

The process is a remarkably simple one. A small hypodermic syringe, filled with the preparation, taken from a rabbit, is injected under the skin, the point of the instrument being no bigger than a wool needle. The operation is as trifling as it is painless, and occupies about five seconds. It is repeated on fourteen successive days, the dose being made slightly stronger each time.

So quickly is the inoculation accomplished, and with such system, that the eighty-nine patients on this occasion were all attended to in forty minutes, and had all left the hall in less than an hour, although several cases of bad bites required surgical dressing before being sent away.

That waiting room, had, indeed, presented a curious spectacle, as may be judged from the fact that, among the anxious-faced group, I had noticed a

little English girl, a French soldier, a Belgian fisherman, a German governess, a stately Arab in his flowing burnouse, together with some fifteen children, two or three of whom were babies.

After the death of any rabid animal (and many are sent to the institution), it is cremated in a proper cremating furnace, that the germs which have done so much harm during life may do no further damage after death. A dog with rabies may have many ways of manifesting its mania; some howl, others have a cross, sharp, and incessant bark, most are dejected and sullen at first, and all are more or less violent in the later stages of the disease. Most dogs as well as human beings have a horror of water in every form, either the sight, sound, or feeling of it throws them into convulsions. Some dogs die of paralysis without dread of water, but with an inability to swallow, as the efforts to do so always brings on a spasm of the gullet. Paralysis is in general the last act in the drama of rabies. At the Institute Pasteur many thousands of people have been treated for hydrophobia, and the enormous number of successful cases increases year by year, as the discovery becomes more perfected. One rabbit a day will inoculate about a hundred persons, so all the terrible stories one hears of thousands of rabbits being required is absolute exaggeration.

For years after such institutions had been started in Russia, Italy, Constantinople, Bucharest, Rio Janeiro, Buenos Ayres, Havannah, Chicago, Malta, &c. England refused to have anything to do with one. The anti-vivisectionists got up petitions to prevent one being started in this country, and yet at the very time, whenever a case of rabies occurred here, the patient was sent over to Paris by the Lord Mayor's Mansion House Fund, or some local authorities, in the case of policemen, postmen, or country labourers. They never paid one penny for their inoculation, because all such work was done free by M. Pasteur. So that actually at the time we were accepting his charity, and showing our approval of his wonderful researches by sending him patients, we were abusing him on this side of the Channel. We are a little more enlightened to-day; and now the virus can be procured in London at the British Institute of Preventive Medecine, as well as the anti-toxin for treatment in diphtheria.

The range of incubating periods, in persons known to have been bitten by really rabid animals, according to M. Pasteur, is as follows:

20	per cent.	manifest	the disease	in 30	days.
50	,,	,,	,,	60	,,
70	,,	,,	,,	90	,,
90	,,	,,	,,	120	,,

The longest incubation period as yet authentically known is one solitary case, where the symptoms did not appear till fifteen months after the person was bitten, thus showing the incubating period of rabies may be from thirty days to fifteen months, a very much longer period than is usual in other germ diseases, such as scarlet fever, whooping cough, typhus, typhoid, cholera, measles, or small-pox. People may be glad to hear that since Pasteur's cure and the muzzling order hydrophobia has been steadily on the decrease, and there have been no epidemics for some time; formerly it came periodically as a wave, like scarlet fever or measles.

Although the Institute Pasteur has lost its figure head, it will be carried on in exactly the same lines by Dr. Roux, who during the last few years had gradually taken Pasteur's position, as he has relinquished his work little by little. Dr. Roux was himself a student under Pasteur, then an assistant, and latterly one might say partner. Anyway, he is a most remarkable and capable man, and thoroughly competent to continue the work which has led, or is leading, to cures for hydrophobia, preventives for fermentations in beer, vinegar, etc., disease in the silkworm, the potato beetle, anthrax in cattle,

diphtheria, and consumption; indeed, in all kinds of diseases resulting from the establishment of the germ theory of disease.

THE FUNERAL OF M. PASTEUR.

On Saturday, October 5th, with all the pomp and ceremonial of a State funeral, the remains of Louis Pasteur were laid to rest in the stately church of Notre Dame de Paris. At ten o'clock, the cortége, about a mile in length, began to move towards Notre Dame, and arrived there about half-past eleven. All along the route, nearly two miles in length, the streets were densely packed by crowds of spectators, the number of whom was estimated at over three hundred thousand. The route was lined by police and military, but their assistance was hardly needed, so respectful and reverent was the enormous assemblage of people. The Chefs du Service Pasteur, with the representation of the French and foreign pupils of the Institute, was the first to enter the church. Then the coffin was carried up the nave, preceded by a procession of priests, and immediately followed by the son, son-in-law, and grandson of M. Pasteur. These were followed by the Ministers of State, the Ambassadors (among whom was Lord Dufferin), and the diplomatic bodies. After them came the Academy of Medicine, members of French Academy, representatives of the learned societies of France, of the students of French Universities of Industries, and the foreign representatives. Among these were Sir Dyce Duckworth, representing the Royal College of Physicians, London; the President of the Royal Agricultural Society of London, representative of the Royal Society, etc. The Chefs du Service Pasteur were all present, including MM. Roux, Chamberland, Duclaux Metchnikoff, and Trocard. Among the representatives of the pupils of M. Pasteur from abroad were Drs. Sukianoff, St. Petersburg; Bujwid, of Cracow; Denschmann, Berlin; and Hunter Stewart, Edinburgh. The Mass began when the President of the Republic entered, the whole service being grand and impressive. The Archbishop of Paris gave the absolution. The body was now removed to the great square of Notre Dame, and placed again on the catafalque. The President then left the church, accompanied by the Grand Duke Constantine and Prince Nicholas of Greece, and followed by the whole congregation. M. Poincare, Minister of Instruction, then mounted a rostrum draped in black, from which he pronounced the funeral oration. Addressing the assemblage in a clear, ringing voice, he with great dignity passed a eulogium on the late savant in terms which every one felt to be worthy of the great occasion. After recounting the services of M. Pasteur, he concluded as follows:—"Happy," said Pasteur, "happy he who carries in him an ideal, and who obeys it." He has all his life obeyed the purest ideal, the high ideal of science, virtue, and love. All his thoughts and all his actions have been lighted up by this internal light. He has been great in feeling as well as in intellect, and posterity will place him among the apostles of right and truth. Farewell, dear and illustrious master! Science, which you have so nobly served; science, immortal and sovereign, by you become more sovereign, will transmit to the distant ages the ineffaceable imprint of your genius. After the conclusion of the speech, M. Poincare descended from the rostrum amid a low murmur of applause, which showed how well he had interpreted the feelings of those present. For an hour the troops, to spirited music, defiled before the catafalque, in front of which was the President, with the Grand Duke Constantine and the Prince of Greece. At a later stage the coffin was removed to the Church of Notre Dame, there to rest till later it is buried in the grounds of the Institute, close by the bronze representing Jupille, the herd-boy (M. Pasteur's first patient), fighting with the mad dog that had bitten him.

THE HORSE-BOT.

Of the many insects that are associated in this country with the work of the farmer, not the least important is the horse-bot (*Gasterophilus equi.*) It is one of the insects that the farmer troubles himself about least, its ravages being, as a rule, less decidedly apparent than in the case of many other insects. It is a moot point, indeed, amongst agriculturalists whether the horse-bot is fatal to the horse or not. Experiments which have been carried on for some months by Mr. William Sim, Gourdas, Fyvie—a gentleman who is well known over the North of Scotland as a naturalist—tend to modify certain of the current notions regarding the bot. These parasites being in some number last season, Mr. Sim was well favoured by events for observing them, and the following details have been made out.

On a genial day about the end of summer, the female fly deposits her eggs on the hair of the horse—the fore-legs, flanks, and shoulders being the chosen parts. Those placed on the fore-legs and flanks are intended as guests for the animal on which they are deposited, but those deposited on the shoulders for a companion, so that one horse may be infected by licking or fondling its neighbour (as they readily do when on pasture, and when on friendly terms with each other) or by biting when in an idle, aggressive mood.

These eggs have always, hitherto, been supposed to be licked off by the tongue of the horse and then swallowed. Mr. Sim declares that this theory can no longer be held. They are so securely cemented to the hair, that nothing but a sharp knife or scissors can remove them. Last August several hatches of eggs, numbering from 50 to 150 each on various horses, came under Mr. Sim's notice, and, as a precaution to prevent them causing any injurious effects afterwards and for other purposes, the hair was clipped off with the offending ova the same day on which the ova were deposited. Each batch of eggs was kept separate, and carefully examined from time to time under the microscope. From these eggs the first bot made its appearance on the fifth day, thus proving conclusively that the eggs can be hatched apart from the horse, and that the accepted theory of the eggs requiring to reach the stomach of the animal before they can be hatched, is no longer tenable. From the same batch of eggs, all laid at the same time, and kept under the same conditions, they hatched out now and again a few every other day for twelve weeks. Eighty-four days thus passed between the birth of the first and the birth of the last bot, a small percentage remaining unhatched. This variation in time forms one of the most remarkable features of the horse-bot eggs, and in all Mr. Sim's experience, he does not know of a similar case.

The eggs were so sensitive to heat and moisture that a few whiffs of hot breath never failed to supply sufficient warmth to hatch out a few young bots whenever wanted. It is quite evident that some of the larvæ are hatched out and carried away in the horse's mouth at the time that he licks himself or caresses his neighbour. These pests begin their existence by pushing out an oblong valve or lid near the end of the egg, and protrude nearly their whole length, but they never leave the egg-case entirely, even although kept for weeks. unless they are roughly handled, neither can they draw themselves backwards into the egg again. But when touched with a drop of warm horse saliva they quit the egg at once and are all life and activity, only a low power being necessary to see the young bots wriggling about. At first the new-born larva is a tiny, almost invisible, lifeless-looking grub, cylindrical in shape, and consisting of fourteen segments, tapering from the fifth to both ends. Several curved hooks (not two only, as was hitherto believed) or spines project from the head. and are used by the grub to attach itself to the lining membrane of the horse's stomach. A double circle of bristles separate each of the first ten segments. The last or fourteenth segment is cleft in the middle, each half being turned

aside like the arms of an anchor for the purpose of fixing the larvå in the egg, and preventing it from prematurely falling out, until circumstances occur to convey it to suitable quarters. The eggs themselves are of a dull white, and are quite visible on a black or brown animal, but not so easily detected when the hair is white. When better seen the egg is very peculiarly shaped. One end is rounded, and the other very mnch pointed, not unlike a miniature shuttle of a sewing-machine. The full fed bots reach the ground with the horse's droppings in the course of the following summer, and pass the other stages of their eventful life in common with other dipterous insects.

It is, as we have already mentioned, a disputed point whether the presence of these parasites has a baneful or wholesome effect on the horse. But it is certain that as larvæ they draw their nourishment from the inner membrane of the horse's stomach. They must consequently cause him a considerable amount of uneasiness and discomfort at least, and so, to a certain extent, must be of a hurtful nature. The best preventative against any harmful results is to clip off the eggs whenever seen.

Army Veterinary Department.

Death.—We regret to announce the death of Vety.-Capt. H. Wilkinson on the 7th inst., at Pietermaritzburg.

Arrivals.—Vety.-Capt. J. Finlayson, arrived on 9th inst., on completion of tour of service in Egypt. The undermentioned officers arrived from India on six months' sick leave of absence :—Vety.-Lieuts. C. B. M. Harris and W. J. Tatam.

Appointment.—Vety.-Lieut. R. H. Holmes arrived at Aldershot for duty on 15th instant, on appointment.

Transfers.—The undermentioned transfers have taken place :—Vety.-Lieut. W. B. Edwards, Aldershot to Woolwich ; Vety.-Lieut. F. W. Hunt, Aldershot o Newbridge.

Extracts from Foreign Journals.

INTERMITTENT COLIC IN THE HORSE, DUE TO A CHANGE OF RELATIONS OF THE SMALL INTESTINE; CONSEQUENT RUPTURE AND DEATH.

M. Ad. Lucet contributes the following paper to the *Recueil de Médecine Vétérinaire* of 15th September :—

"On the 12th of April I was consulted about a three-year-old horse, in good condition, which had been suddenly seized with colic on the 6th, and had again on the 8th shown the same morbid symptoms. I was informed that on both occasions he had been seized whilst at work in the plough. The attacks had been very acute at the beginning, had gradually calmed down, and finally disappeared at the end of five or six hours. On both occasions the attacks had come on suddenly, without any warning; whilst they lasted the patient had shown no constipation, no diarrhœa, no inflation, and no interruption in the emission of urine. One curious feature of the attacks was that the horse would sometimes, especially when about to rise, assume 'the posture of a sitting dog'—so said the owner.

"On the 16th I was sent for to see the horse, which had been suddenly seized with colic, but before I reached him he had recovered, the colic had disappeared, and the patient was cheerful and beginning to eat again. I learned that since the 8th, the day of the former seizure, the appetite had not ceased nor even diminished, and everything that the animal had taken had been rapidly masticated and well digested. The fæces were normal, had no bad smell, and were free from false membranes, and never streaked with

blood. The pulse was normal, and likewise the rectal temperature; the heart-beats and respiration showed no irregularity. The abdominal walls gave no sign of being painful, the testicles were all right, and, finally, exploration per rectum gave no indication of anything being wrong.

"By way of laxative I ordered 200 grammes of sulphate of soda per diem. On the 19th, new colicky attacks occurred, but gave way rapidly under the action of 90 grammes of Lebas' elixir. Again the attacks returned on the 21st, but were of short duration. On the 23rd, by the owner's orders, the animal was purged with 90 grammes of aloes; this trial passed off all right, and from the 23rd of April to the 3rd of May the general condition of the animal remained good. On that day the horse, which had done no work since the purging, is put in the plough for an hour or two, and this brings on the colic again. I am sent for and arrive in time to observe the symptoms. The animal, looking anxious and dispirited, and with his face slightly drawn, is pawing the ground and twisting about. After a while he lies down with much precaution, rolls about once or twice, first on this side, then on the other, then stretches himself out at full length. After a few moments of repose he lifts his head again and gazes at his flank, then begins to roll again, or, stretching out his fore-legs in front of him, he raises himself up and assumes the position of the sitting dog, just as had been reported to me. After this he gets upon his legs or he falls over on his side. There is no attempt at vomiting and no inflation. Defecation and micturition are normal, heart-beats 55, and temperature per rectum 38·7 Centigrade. A dose of Lebas' elixir is administered and gradually the abdominal pains disappear; the patient rises and remains standing, gives himself a shake, and begins to nibble his food.

"I diagnose an intestinal lesion of slow growth (tumour, abscess, or strange foreign body), and I warn the owner of the probable impending death of the animal by rupture of the intestine. He at once declares his intention of getting rid of the horse, and proposes to fatten him or at least bring him into good condition for one of the fairs held in the neighbourhood.

"Apart from the colic attacks the horse seemed to enjoy good health, had an excellent appetite, and, on the whole, had not lost flesh. The owner, therefore, hoped to get him into condition for sale, and what follows confirms this expectation, for the animal soon arrives at a satisfactory state of plumpness, in spite of successive colic attacks on the 10th, 12th, 17th, and 23rd of May—these attacks being identical in their symptoms with those that had preceded them. On 30th May the horse is put to very easy work; colic comes on; horse is unharnessed and walked up and down, and then placed at liberty in a large stable. For some time nothing beyond the usual occurs, then all at once cold sweats break out in the breast and in the region of the sheath. Gradually these extend and become generalised; the face is contorted and the pains diminish in intensity, or rather the patient is no longer able to struggle against them, and death supervenes. I make a *post-mortem* examination without delay.

"The only interesting lesions are in the abdominal cavity; as soon as it is opened, a gush of muddy liquid escapes, of a slightly arid odour, holding in suspense a lot of particles of food. After this liquid has run out, the ventral walls are entirely removed, and all the intestinal mass, thus exposed to view, is seen to be stained by agglomerations of herbaceous food spread all over. The peritoneum is the seat of pretty severe congestion. Here and there on the large intestine and its membranous attachments there are congestive patches of varying extent. All these are of secondary origin, and the principal lesion has its seat in the middle of the floating part of the small intestine; it consists of a rupture big enough to allow a hen's egg to pass, with regular rounded edges, as if a foreign body, lodged in the intestine, had acted on it slowly and progressively. Still, nothing comes to confirm this

hypothesis, and in spite of careful examinations, I can find nothing to justify a belief in the existence of such a body. The oval opening which had been formed on the lateral wall of the intestine, shows at its widest part a length of six centimètres (about 2½ inches), at its narrowest four centimètres, and it had been formed by loss of substance; it is, in fact, impossible to bring the two edges together and place them in contact. In addition, it is enveloped and almost concealed by the mesentery, which is very much inflamed. On its level and forwards for a length of 25 to 30 centimètres (9 to 12 inches), the intestine, greatly distended and with thickened walls, has an enormous sausage-like appearance, being red and irritated, and having a circumference of 23 centimètres in its thickest part, which corresponds to the rupture. For seven to eight centimètres of its length it is involved in the mesentery which surrounds it completely, and is fixed there by numerous bands of loose tissue of recent formation. Behind this opening the same mesenteric 'sleeve' still exists for a length of 5 to 6 c., and then abruptly terminates in enormous congested pads, black in colour, whence emerges the posterior portion of the intestine, much less irritated and not so wide, being only 6 c. in circumference but not obstructed. The part of the mesentery left free above this intestinal lesion is over a great part of its surface, congested and blackish, and shows its vessels voluminous and turgid.

"This rupture seems to have had for its primary origin a strangulation produced by the mesentery, which, under the influence of some unknown cause, enveloped a few centimètres of the intestine; the strangulation was incomplete because it allowed the animal to live till the day when the alimentary matter injested and accumulated above it destroyed, by incessant irritant action, one of the walls of the sac which contained it."

Malignant Œdema in Cattle.—Veterinary Surgeon Abbinger contributes the following to the *Wochenschr. für Thierheilkunde*:—"Although the bacillus of malignant œdema is very widespread, yet cases of disease produced by it come comparatively rarely under observation, but those which follow may be interesting. A client of mine noticed in one of his cows a swelling, about the size of a man's hand, in the region of the lower glands of the ear, on the 28th September. On the 29th, the swelling was four times its former size, and the animal refused its food. I split up the swelling, pierced the infiltrated connective tissue in every direction with a strong seton-needle, squeezed out the infiltrated matter as carefully as possible, and widened the passages so far that the secretion could escape, and I had the parts brushed out several times daily with a 1 per 1,000 solution of sublimate, which was afterwards replaced by a 5 per cent. solution of creolin. In addition, the animal was removed to an airy stable, and got luke-warm bran-drenches. She had quite recovered in ten days. A similar attack on another cow ran the same course. In this animal I found extensive œdema on the right external masticator muscle, and beside this, to the right of the fraenum of the tongue, I noticed an injury to the mucous membrane, infiltrated with jelly-like substance. On its being opened up, a quantity of stinking fluid was exposed. The wound was syringed with creolin, but, unfortunately, the owner tied a piece of old cloth on it, and next day the swelling had again considerably increased. The general health of the animal was likewise disturbed. Deep scarifications led to the formation of a fistula in the cheek. Cure took place within 14 days. Three months after the cow was again attacked by malignant œdema; there was complete loss of appetite and fever; temperature, 105° Fahr.; but again, after prompt operation, a cure was effected in ten days. This case controverts Chauveau's assumption that an attack of the disease produces immunity. I am rather of opinion that repeated infection weakens the power of resistance. In a third case the swelling had extended within two days from the throat to the middle of the neck and was as large as a loaf of bread; there was also

fever and a temperature of 105° Fahr. I opened up the swelling vigorously and exposed, as in the former case, a great quantity of evil-smelling fluid. A cure was effected in three weeks. In a fourth case the œdema was found, on the third day of the attack, to have extended from the throat to the point of the breast, and the general health of the animal was seriously affected. The swelling was opened up by me over its whole extent and treated with creolin, but next day the swelling had greatly increased and the animal died. A *post-mortem* was unfortunately impossible, but probably death was due to the fact that the whole of the œdematous fluid had not been removed, perhaps because I was afraid to cut too deeply in the neighbourhood of the great vessels running over the sternum. In cases like these, of malignant œdema, the professional man may easily make a mistake by supposing that they are cases of simple inflammatory œdema, and then he is startled by the grave termination. Let the practitioner be on his guard from the outset and watch for symptoms of the malignant form.

Infectious Œdematous Swelling of the Limbs.—Veterinary-Surgeon Rexilius, of the 10th Regiment of Prussian Dragoons, writing to the same journal says:—In a squadron of our regiment three horses were found on 24th July to have swollen legs, but otherwise seemed in good form. On the following day 30 other horses were found to be affected in the same way. Temperature, pulse, breathing, appetite and action were normal, but in some of the horses the conjunctivæ were reddened. The swelling was confined to the feet and extended as far as the hocks, which were hot and were doughy on pressure, apart from this there was nothing abnormal. On the third day other 16 horses were affected, whilst 22 of those formerly attacked had recovered. On the 27th and 28th July several new cases occurred, but there were none after that date, and on the 29th the swellings on all the affected animals had disappeared. The whole course of this curious affection was one of some five or six days, and it cannot, therefore, be described as a disease. It could not have been malanders, nor phlegmon, nor the œdematous swellings caused by long standing. I diagnosed it as a nettle-rash, the symptoms favouring such a conclusion. It was frequently noticed that first the limbs became swollen and then the pimples began to appear on the body. At the time of the outbreak of this epizootic affection a horse of the same squadron became ill of a severe nettle-rash over its whole body, which caused extreme depression, as in animals affected with staggers. All the symptoms seemed to me to point to an unusual form of nettle-rash in which the œdema was confined to the legs. I could not discover the cause; the fodder was perfect. Chemical examination of the water showed nothing wrong. Perhaps the trouble lay in the straw; it had been exposed to the sun all day, and as the heat was very great, it is possible that some dormant infective material had thereby been developed.

A German Fairy Tale. A new Cure for Lock-Jaw.—The following charming story is contributed to a German veterinary magazine, by Veterinary-Surgeon Harmsen; it forms a valuable addition to our knowledge on therapeutics. On the 19th of June a farmer was bringing home a mare which, with her foal, had been grazing in a meadow some eight miles away from the farm-house. The farmer drove along at a good pace, and the mare and foal trotted behind his gig, at first merrily enough, but gradually the mare became more and more straddle-legged and stiff, and when at length the farm-house was reached the poor animal when once she had come to a stand was scarcely able to stir from the spot. She was breathing heavily, and although she appeared to be hungry she could eat nothing. Then the farmer sent for Mr. Harmsen who at once saw that it was a severe case of trismus. The mare was lying on the green sward but she was not able to raise herself; her neck was stretched out stiff, the nictitating membranes were half-drawn

over the pupils, the tail was all twisted to the left side, and the poor beast was no longer able to swallow water; there was no doubt about the case. Mr. Harmsen had no great hopes of saving the mare but ordered a dose of chloral to be given to her by her owner. So the farmer set off to fetch the medicine, but as he jogged along he met another farmer and to him he told his troubles; this farmer was a wise-acre, and he said at once to his sorrowing friend that a horse suffering from lock-jaw could only be cured by a shot from a gun! "There is no other chance for the beast," said he. Now, farmer number one was anxious to go to see the opening of the Baltic Canal, he had very little trust in Mr. Harmsen's proposed treatment, and he had little hope of seeing his mare get better, and he thought he might at any rate give her a double chance and at the same time settle the matter speedily. So he bought the medicine and gave the mare a double dose of it per anum. Then he went to another farmer and asked him for the loan of his gun, loaded with a double charge. Farmer number three did not like the look of the thing, but could not very well refuse the loan of his gun to his neighbour, and so he took good care when loading his gun to load it with a double charge of powder only. Now comes the catastrophe. The farmer, owner of the mare, armed with his blunderbuss, goes to the stable, lays himself down on the head of the prostrate mare and fires—against the wall! There is a terrible recoil from the gun, and likewise from the mare. The farmer gets up with all haste and flies from the stable, but as he does so he takes a last look at the mare, and behold, there she is standing on her legs drinking water out of a bucket, and already pawing the stable floor! From that moment the animal was completely cured, and became the wonder of the whole neighbourhood, as our readers can well believe. Mr. Harmsen had been unaware up till that moment that the farmers of his district practised such "cures;" but a colleague told him he remembered having heard, when quite a youth, that the country-folks of his district used to "cure" horses attacked by lock-jaw by holding a thick board in front of their heads and giving a tremendous crack with a hammer on it!

The Spaying of Cows: Its Practical Utility.—We abridge the following from *La Revista Veterinaria*, a Spanish journal published in Buenos Aires:—We used to be of opinion that spaying of the cow was both useless and uneconomical, and we based our opinion on observations made whilst in Europe. We thought that the cost of the operation, the large percentage of losses consequent thereon, and the length of time required by the animals to regain condition and become fat for market, were not conpensated by the improvement in the quality of the flesh and the prices obtained for the fat stock at market. The results achieved by our colleague, Senor Rucq, show that we were wrong in our estimates. Last year he spayed some ten thousand cows with extraordinary success, his average of deaths not exceeding two per cent. Our friend writes as follows: "If breeders wish to make the most of their herds, they must practise a wise selection, picking out not only good bulls, but likewise cows that are well-formed and of proper weight. All cows must be excluded for breeding purposes that are not well shaped, or are not of sufficient bulk or are too old; at present such animals do not fatten readily, and they fetch poor prices in the market. They ought to be set apart and spayed, because the flesh of a cow that has been thus treated is of better quality—tenderer and more delicate; and the sooner the operation is performed the better, because then the flesh becomes streaked with fat, and therefore juicier and pleasanter to the taste. It is likewise more digestible and more nourishing. When speying is performed on calves, the result is more flesh and more fat and a smaller quantity of bone." Our friend then goes into the question of milk production, and

draws conclusions favourable to the spaying of milch-cows intended afterwards for the butcher. We agree with him in thinking that the flesh of spayed cows—especially when the operation is performed early—is superior to the flesh of bullocks castrated at the same age, and fattened under the same conditions.

The following details are very curious and interesting. Senor Rucq lately spayed some sixty pregnant cows. These animals did not abort, as might have been feared, in consequence of the operation; the calves were developed in the normal way, and the mortality among them was only three per cent. The possibility of spaying, without danger to the offspring, a pregnant cow is of great importance to our farmers and breeders, as now they do not need to care, when setting aside animals for spaying, whether they are pregnant or not, which is often a very difficult matter to determine.

Senor Rucq disapproves entirely of spaying through the flank; he employs the vaginal operation, and says :—"This operation, if more difficult, avoids the dangers that accompany the operation through the flank. The animal suffers less, and, in fact, scarcely feels the operation. The losses are quite trifling. I have a special shackle, which costs very little, and with this, and the help of one or two labourers, I can perform the operation without needing to cast the animals." The cost of the operation per head is about a dollar on the average. When the weather is good our friend, with the help of his assistant, who always accompanies him, has accomplished the large number of 100 to 150 operations per day, and these are actual figures. We shall return to this subject, and explain the mode of operation, in a future number.

Milk in a non-pregnant Mare.—Veterinary Surgeon Dettmer of Spandau contributes the following to the *Berliner Thierärzt Wochenschrift*:—"On the 6th July last, I was asked to examine for pregnancy a black mare belonging to one of the tramway companies. On arriving at the station where the mare was stabled, I was informed that she had been some 13 months in possession of the company, but had during all that time never been covered. For the last five weeks or so, in spite of the fact that she had regularly performed her daily work in the cars, the mare had considerably increased in abdominal circumference. As she was in poor condition, it was determined to let her stand idle for a time 'until she foaled.' Her udder had also increased in size, but it was observed that this distention was greatest in the morning, and that in the course of the day, after the mare had moved about freely in a big yard, the swelling diminished a little. It was likewise noticed that whenever cold water was given to the mare, intermittent movements took place in the abdomen of the mare. I passed my hand carefully over the region of the flanks several times, but could find nothing resembling a fœtus; I then tried examination per rectum, but this also, to the great astonishment of those interested, gave likewise a negative result, that is to say, no trace of a fœtus could be found, and consequently there was no pregnancy.

"The question that will most naturally be asked is, how this mare, in spite of her hard daily work, came to increase so much in abdominal girth, and gave indications of milk production? As pregnancy was out of the question, we must assume that the mare was naturally disposed to be big-bellied, and secondly, that some unknown irritation, proceeding from the spinal marrow, had worked reflexly through the nervous spermaticus externus on the udder, and so brought about the production of milk. The intermittent abdominal movements following on the absorption of cold water by the mare are to be explained as severe intestinal contractions produced reflexly by the water."

Obituary.

THE LATE MR. GEORGE COWE, BALHOUSIE.—The death occurred recently, at Balhousie, Forfarshire, of Mr. George Cowe, after a protracted illness. Deceased was a native of Sprott, Haddington, and when quite a young man he was appointed land-steward of the Panmure Estates, belonging to the Earl of Dalhousie. During his long connection with the estates, he served under four lairds. Mr. Cowe took a great interest in agriculture, and in addition to holding the farm of Balhousie, he managed the home farm of Mains of Panmure. He was a director of the Highland and Agricultural Society, and also of the Angus Agricultural Association, and was regarded as one of the best authorities on sheep breeding in the county. The veterinary profession in Scotland has lost a great friend by his death. He took much interest in the science, and was a warm advocate of its great utility to stock-owners, and of the benefits the country had reaped from the work of veterinary surgeons. Mr. Cowe was a member of the Scottish Metropolitan Veterinary Medical Society.

McCouseley, S. M., Campbletown, Argyleshire, July, 1884.
Stanley, Thos., Edmonton, Middlesex, May, 1853.
Kenny, John, Crown Street, Liverpool, April, 1870.
Buckingham, John, Harleston, Norfolk, April, 1831.

Notes and News.

THE *Times* publishes a small table of figures which gives us reason to hope that the Board of Agriculture is, after all, meeting with a certain measure of success in its endeavours to stamp out swine fever. As everyone knows, the disease has caused great destruction among many herds, and it is very difficult to suppress it when once it makes its appearance in a district. The figures for 1894, and also those of the present year, show that the number of outbreaks was at a *minimum* at the beginning of the year, and rose to a *maximum* in July and August, and then they began to decline again. Last year the total number of outbreaks for May, June, July, and August was 2,343, whereas in 1895 there is a decrease on those figures of 341. There can be no question of the significance of those numbers, and it is to be hoped, now that something has really been accomplished in arresting swine fever, that pig-keepers will be induced to exercise the utmost care in the housing and feeding of their animals. As the *Times* remarks, the science of bacteriology has not yet found its way into the pig-trough, and there is still a wide lack of appreciation of the fact that the pig is naturally a clean animal. Let all interested in the pig business be careful about the housing and feeding of their stock, and they will materially assist the authorities in stamping out swine fever.

CARBOLIC ACID FOR CATTLE-ABORTION.—Considerable interest is being taken in the diary circles of Scotland at present in regard to the prevention of abortion in cattle by the administration of carbolic acid. The remedy has been tried by herdsmen in Ayrshire and Dumfriesshire, and has been wonderfully successful. The dose to begin with is from 30 minims to 1 dr., well mixed with the cow's food, and it may be increased gradually, and with safety, to ½ oz. every other day. The acid must be thoroughly well mixed with the food, and so far no observation has been made in regard to the effect of the acid upon the milk-secretion. The same treatment has been tried in Germany, but there the phenol is administered subcutaneously—viz., 5 c.c. of a 2 per-cent. solution.

THE *Lancet* says that the "services which electricity can perform in medicine and surgery, are both numerous and varied," which seems to be a bit of a pleonasm; but our contemporary proceeds with the remarks that "During the past ten years, the impetus given to the study of electricity by its commercial

applications, has created fresh interest in medical electricity, and there has been much improvement in the apparatus used, particularly in those details of construction which simplify the management of medical batteries, and in the introduction of galvanometers for accurate measurement. Fresh methods of treatment have also been proposed, some of which are likely to prove of real value. On the Continent, and in the United States, electro-therapeutics, as some of its votaries love to call it, is making progress. In France, there are two monthly periodicals devoted exclusively to medical electricity, and in America, the Electro-Therapeutic Association is busily attacking the question of apparatus in order to obtain a series of standard instruments and accessories for the use of its members. England, unfortunately, has as yet hardly begun to treat medical electricity seriously, although the electrical departments at some of the metropolitan hospitals are doing excellent work." It is satisfactory to learn so much on distinguished authority; but students of electricity will venture to doubt whether much more can be done with that in the cure of disease than can be effected by the administration of drugs. *Quantum valeat.*

Correspondence.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—Some few weeks ago I had serious trouble with the pit horses of a large colliery near here, through, in my opinion, their working in impure air. We lost several, but after altering the condition under which they worked we have had no further trouble. The manager of one of the collieries called my attention to a report of a paper in the *Colliery Guardian* on Lathyrus poisoning, the symptoms of which he thought were similar to the cases we had. On reading the report I found a similarity, so wrote Prof. Williams, describing briefly my cases. He very kindly at once replied, and thinking it might be of interest to some of your readers enclose you report of paper, my letter, and Prof. Williams's reply.—Yours truly,

CHAS. E. CHALLINOR.

"LATHYRUS POISONING."

Colliery Guardian,
Oct. 11th, '95.

MR. F. G. MEACHAM read a paper on Lathyrus Poisoning amongst the horses at Hamstead Colliery. He said that some time ago, owing to the high price of horses' feed, they decided to use peas in place of oats or beans, and this they continued for twelve months without any ill effects.

Early in November last, however, it was noticed that some of the horses seemed to be getting thick in their wind, and after running a few journeys they would pant and stretch out their necks to gain breath. The attention of the veterinary surgeon was directed to them, but he could offer no explanation. The horses became rapidly worse, and towards the middle of the month, one died, six others were badly affected, and three died four days afterwards. When the horses died, a sample of the food was sent to Professor Williams, New Veterinary College, Edinburgh, and he wrote that he detected the poisonous pea or vetch lathyrus sativus amongst the food.

In all, twelve horses died, and on others that had eaten the poisonous vetch, and which showed symptoms of poisoning, the operation of tracheotomy was performed; this gave them relief. But though they recovered, they were permanently injured. The pea came from various places, and was of a variety of colours. As with men, so with horses: the lathyrus was a cumula-

tive poison, the symptoms of poison showing themselves the sooner the greater the proportion of seeds in the horses' food. The Great Western Railway Company had lost twenty-four horses from the same cause, and there were many losses by other companies.

HIGH BANK, PENDLEBURY,
Oct. 17th, 1895.

DEAR SIR,—I have had my attention called to a report of a paper, read by Mr. Meacham, on lathyrus poisoning, and am much interested, as for the last two or three years I have had similar trouble with the pit ponies, or rather horses (some being between 15 and 16 hands) of a large colliery firm, but have attributed it to impure air, and not in any way connected with diet, as the animals working on the surface (over 200) were fed precisely the same, and have had excellent health. In my cases, the animals would feed all right, turn out to their work, hauling waggons, and after a short time begin to breathe hurriedly, and if not stopped working, and brought into good air, would stagger, fall, and, as in several cases, die almost immediately, in my opinion, from asphyia or oxygen starvation. All the animals affected were working in impure or return air; those fed on the same food, working in the intake or fresh air, remaining all right.

The diet consisted of oats, beans, maize, and chopped hay. I may also mention that the cases occur at the end of summer, or when the heat is greatest. In the case reported, will you kindly say if there were any horses above-ground fed on the same food, and if they were affected or not. Apologising for troubling you, believe me, with kind regards,

Yours truly,

Prof. Williams. CHAS. E. CHALLINOR.

NEW VETERINARY COLLEGE,
EDINBURGH.

DEAR SIR: The horses referred to in the paragraph were both above and below ground, and in all the other cases I have had to do with seven or eight of the horses were above ground.

I should say that your ponies were suffocated. The symptoms from lathyrus are not only rapid breathing, but intense roaring, and they remain roarers. You do not say whether the horses were fed on lathyrus or not, but I conclude that they had no other food than oats, beans, maize, bran, and chopped hay.—Yours faithfully, W. WILLIAMS.

6, THE CRESCENT, TAUNTON.
October 21st, 1895.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—It is with regret I ask you to notice in your obituary of members the decease of my late brother, Veterinary-Surgeon Joseph Gibbs, retired pay, formerly of the Royal Horse Artillery, which occurred at Brighton on September 5th from myelitis following "sunstroke," received during service in tropical climes, aged 48 years.

Deceased graduated in 1869 after seeing very extensive practice with his father, then the oldest qualified veterinary surgeon in the West of England and also with Mr. Wheatley, of Reading, and Mr. Broad, of Bath, and whilst serving in Poona the largest horse station in India, for two years, he received from commanding officer and from the Governor of Bombay the highest enconiums for his skill and assiduity to his duties. I often heard him speak of the great kindness and the knowledge he gained from yourself during his two years' service in Edinburgh, and for which he had the most grateful recollections. From the first inception and until his death he was a constant subscriber to your journal and you will, I hope, pardon me if I take this oppor-

tunity of wishing you every success in its continued prosperity.—Believe me, with great respect, your obedient servant, ROBT. GIBBS, M.R.C.V.S.

[Well do we remember our friend Mr. Gibbs, and deeply do we regret his loss. He was one of the most warm-hearted men we ever had the good fortune to know. ED. *Veterinary Journal.*]

Reviews.

VETERINARY PHYSIOLOGY. BY VETERINARY-CAPTAIN F. SMITH, F.R.C.V.S., A.V.D., Examiner to the Royal College of Veterinary Surgeons. Second edition (re-written). Baillière, Tindall & Cox, London.

For some considerable time past, the tendency in scientific instruction, and, of course, in text-book compilation, has been to strip the subject of all superfluous loading of details, and to show it as founded upon certain "broad facts."

To this task our author has set himself, and pointed the student and practitioner to various other books for detailed information. Captain Smith's extensive acquaintance with his subject and his untiring capacity for detail have, however, carried him so far beyond his modest advertisement to the above effect in his preface, as to make his treatise a mighty mass of detail, backed up by figures to second decimal places in numerous columns, while the "broad facts" have suffered so great a broadening or extension, we may say an extenuation, from the weight of so learned a superstructure, that their depth and solidity has been somewhat endangered. A keen eye and careful reading will, however, find them "all there," except where they have, as by too many previous writers on this subject, been drawn from the two reprobates, man and the dog, a duality considered beyond the pale of veterinary classics.

As in the former case, however, our author has disclaimed in his preface what he afterwards introduces, for do we not notice the following references to one, at least, of the unworthy pair, at p. 57 where blood-pressure is under discussion, at p. 125 where salivary secretion is treated of, at p. 175 where the nerves of the alimentary canal are explained, at p. 214 where absorption is the theme, and at p. 375 where the motor areas are in evidence, etc., not to speak of the chapters on the senses where poor humanity is under contribution?

Many eminent human physiologists figure also in his table of thanksgivings, and no doubt some matter from their works serves to pack out the purely horse physiology which forms the true backbone of the book. In our ignorant inanity, we had made ourselves believe that perhaps Captain Smith might have kept that backbone in a skeletal state, and reserved it for some pages in an appendix, and so saved much trouble both in the weaving up and the unravelling, but we must not encourage slovenly, and short-road-seeking habits in readers, who are presumed to be idle students in need of mental exercise.

In this light, perhaps, Captain Smith has ignored the usage in all previous books of this nature, and avoided the presence of histology—he tells us so, but kindly relents afterwards and gives a few nice figures from mixed sources (uncomplicated, however, by explanation beyond names). Some stupid people might, as from experience, have been able to make more of blood if a few scratches had been figured. Text-books, have become of late too much of picture books, and hence we learn here about the mechanical complication of such things as cardiographs, sphygmographs, ophthalmoscopes, etc., etc., in six or seven lines of letterpress alone. Talking of the blood, we had thought the sodium salts were chloride carbonates, etc., and not bicarbonates in any quantity at least. In a book our author speaks of the latter salt is named, and we must blame the source and not the compiler after all.

Again, as to tables of analyses of which our author evidently is very fond

we rejoice with him in finding some old friends of the days *ehen*, before our hair became grey. Hoppe-Sezler has certainly served well his day and generation, and the printer-man should by no means have made his figures incomparable with those quoted by others, from the same source.

We once thought we knew the "cardiac cycle," and could tip off all about the periods of "Pause" and "Repose." Now Captain Smith tries unfairly, we think, to muddle us by mixing up both those terms in the one, *Pause*.

Chauveau is twitted with giving 60 per m. as the pulse, while we beg to point to his figure from M'Kendrick at p. 35 as giving 50. Good old Chauveau's stupid people should compare pp. 31 and 32, about Captain Smith's Pause, as also with the figures at p. 35.

Somehow, we seem to miss our familiar friend, the mucus cell, as an element of saliva, and have a difficulty in seeing how the absence of ptyalin can be got over; but that is mere detail. In an elementary book, the stomach certainly gets fair room in 37 pages, and locomotion in 29. Farmers and others interested in hay and oats, will be glad to see long tables of analysis given accurately, no doubt, to the second place of decimals! Let students also rejoice. After all, we think it hardly fair that poor old Colin should be made responsible for so much, and leave "not a line" outside the cover to his honour. A few good pictures in telling black appear about the nervous system, but, perhaps, the general artistic effect, or the degeneration of our eye—one or both, may account for our failing to see new views of "paths" in the spinal cord.

Possibly, also, our memory is at fault when we fail to remember how the chromatic aberration of the eye is prevented by a difference in the *refractive* powers of the media (see p. 419). Possibly, also, our acquaintance with the hard facts of practice leads us to be rather uncourteous in denying our author's statements about sweat almost *in toto*. As a work so complete in itself, we feel quite unable to review its many technological and widespread disquisitions; but we feel sure that it will be carefully read by everyone who seriously intends to master the difficulties of entering our now many-sided profession. More need not be said. For other information, Physiological, &c., &c., the student is shown where to go.

The Art of Horse Shoeing: A Manual for Farriers. By William Hunting, F.R.C.V.S., Ex-President of the Royal College of Veterinary Surgeons.

The preface informs us that this work was written for three classes of readers: for horse owners, who may interest themselves in the subject, for farriers who are open to conviction, and for veterinary students, who have to be examined. The author has also aimed at imparting his ideas on the subject in simple and clear language, and he has done so in a skilful and admirable way. No contribution to veterinary literature on this subject has as yet appeared, that we would more willingly place in the hands of our farriers and our students, for their guidance and instruction.

EDITORIAL NOTE.

"A Reader" is referred to Messrs. Maw, Son, and Thompson, Aldersgate Street, London, E.C., who most probably will be able to furnish him with glass eyes and the desired information.

Communications, Books, Journals, etc., Received.

Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); L'Echo Vétérinaire (Liége); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift; La Revista Veterinaria (Buenos Aires).

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

DECEMBER, 1895.

THE BOT-FLY OF THE HORSE.

BY THOS. B. GOODALL, F.R.C.V.S., CHRISTCHURCH.

THOSE of your readers who interest themselves in natural history must, I am sure, feel indebted to you for the publication of the admirable memoir by Mr. Wm. Sim, on the horse-bot, in your last issue of the JOURNAL.

Perhaps a few friendly criticisms from one who has also followed very closely the life-history and habits of the fly in question may tend in some slight degree, to enhance the value of the contribution.

Horses, whether turned out at grass or working in the fields, do not take the least notice of these flies hovering about them; they certainly do not induce the semblance of fear or of excitement, giving us, therefore, ample reason for re-opening the controversy between MacLeay and others and Bracy Clark, some seventy years ago, whether the "οἶστρος" of the ancients was the same as the fly that is now classified "*Œstrus*."

There can be no reasonable doubt but that the Greek word was meant to signify the large horse-fly or ox-fly, the *Tabanus*; this has a most formidable mouth, and inflicts sometimes most serious wounds on horses, cattle, and man, and its presence will send both horses and cattle into a frenzied state; whereas the bot-fly we are now discussing is distinguished amongst the Diptera as having an obsolete, functionless mouth.

It may be worthy of passing notice that the Latin words *Œstrus* and *Tabanus* have the same meaning—a "gad-fly," "horse-fly," or "ox-fly; and then the Greek οἶστρος, signifying madness, frenzy, is also used to describe the gad-fly, or anything that torments, being an exact description of what is done by the *Tabanus* of to-day; but the harmless *mature*

bot-fly cannot have laid to its charge any of the attributes underlying the name *Œstrus*.

It is very seldom that more than one bot-fly is seen about one horse at the same time, and each female is capable of depositing about one thousand eggs. I have taken the trouble to count them approximately in a fecundated female I happened to kill in my attempt to capture her as she was depositing her eggs.

Naturalists have, years ago, discarded the idea of the horse licking the *ova* off the hairs; as Mr. Sim remarks, they are much too firmly glued on for this to be accomplished.

A reference to Neumann's "Parasites and Parasitic Diseases of Domesticated Animals," translated and edited by Dr. George Fleming, pp. 350 and following, will prove that *then* (1892) the idea was exploded; but "Westwood on Insects," published as long ago as 1840, does not convey the idea of the *eggs* being taken into the mouth of the horse. He says, in vol. ii., p. 577 and 579, "The eggs are deposited by the parent-fly where the *larvæ* may be removed by the tongue of the animal itself into the mouth, and thence into the stomach."

From personal experience, in taking ova from horses at random, and examining them, I have found quite as many *empty shells*, still adherent to the hair, as those that are still unhatched. Only a few days ago, I found some empty "egg-shells" still on the hairs, and on a piece of skin, the hairs on which are thickly studded by the eggs, and which I have preserved for illustration, there are about equal numbers of empty egg-shells, and eggs still containing larvæ.

The eggs are always found clustered in greatest numbers on the inner and back part of the knee-joint.

Mr. Sim's experiments, proving the length of time the larvæ may retain their vitality in the eggs, are profoundly interesting, but it should be taken into consideration that the eggs on which his deductions were based were removed from their natural environments, as he says in his next sentence: "The eggs were so sensitive to heat and moisture that a few whiffs of hot breath never failed to supply a sufficient heat to hatch out a few young bots when required."

In nature, this is what is constantly occurring; the horse bites and licks the hairs on which the eggs are agglutinated, thus hatching out the larvæ, and taking them into the mouth.

To obtain specimens for my microscope, I placed the ova in warm saliva and kept breathing on them for a minute or two, when the larvæ emerged from the eggs.

The larva has *thirteen* segments. Mr. Sim gives the number

as fourteen, no doubt accounting the extrusion of the spiracles from the last segment as one itself. Mr. Westwood gives *eleven* as the number, and Dr. Fleming in his translation of Neumann's work, as thirteen, when the larva is first hatched, and in later stages, after the third moult, as only eleven—I have very carefully examined specimens I have preserved at several stages of existence, and I can distinguish thirteen segments in each.

The first cephalic segment of the newly-hatched larva, which in specimens mounted for the microscope, is almost retracted, has, when extended, the appearance of being studded all over with hooklets; but immediately surrounding the straight, corneous, lancet-shaped mandibles, which are very rarely seen fully extended—there is a whorl of eight larger hooks, arranged in the form of a kedge-anchor, and, like the smaller ones, pointing backwards, thus enabling the creature to obtain a hold whichever side of it happens first to come in contact with the stomach of its host. As there are only two hooks (the homologues of the maxillæ) seem in this position, later in life, it is probable that the extra ones, no longer needed, are "cast" with the first "moult."

From the second to the sixth segments there may also be seen, with a higher power of the microscope, a row of small bristles behind the double row of hooks, which, by-the-bye, surround the *anterior*, not the *posterior* borders of the first ten segments, as described by Neumann and other writers.

In one batch of larvæ I have, that was taken from the stomach of a horse in the month of November some five years ago, there is scarcely any evidence of hooklets on any part of the body (except the maxillæ). I take it these were about "moulting"—at this stage of their existence the larvæ are a bright blood-red colour.

The anchor-like arms of the last segment mentioned by Mr. Sim are the extended extremities of the two spiracles, they will be found to communicate with two large air-sacs from which branches containing air are distributed to all parts of the body.

One other fact of immense interest as illustrative of the futility of attempting to rid the host of these parasites by medicinal agents is worth recording.

In one of my jars I have a piece of stomach with the bots *in situ*, taken in the month of June, as they were about leaving their winter's quarters. The piece of stomach, with bots attached, was first soaked in cold water for three days, and then placed in a 1 to 400 solution of perchloride of mercury,

and after being four days in this, there were still signs of vitality in some of them. Some allowance must be made for the fact, that as they were about undergoing their change from the larva to the pupa stage, their outer skin was becoming insensitive to external influences, preparatory to hardening to form the pupa case; but I think it should prove conclusively, that these are, in nature, practically beyond the reach of vermifuges.

I have noticed invariably that when the male fly emerges from the pupa as the perfect imago, and when the drying process is completed, he stands still, and keeps up a continuous buzzing, the wings all the time will be seen to be absolutely motionless, and the sound is produced by the "halteres" or balancers, the vibrations of which can be distinctly seen.

From having found these bots frequently in the stomachs of horses that have died from the results of accidents, and in the pink of condition, and the best of health, I must lea n the side of those who do not regard their presence as generally baneful.

I would refer your readers to Dr. Fleming's translation of "Neumann's Parasites, etc.," for a description of this, and other varieties of the gastrophilus. I have only reared two, the *G. equi*, and the *G. hæmorroidalis*.

TUBERCLE OF HORSE.

BY JOHN HUTTON, ESQ., F.R.C.V.S., KELSO.

ON September 18th last I was called to see a Clydesdale colt, and found the animal suffering from a swelling on the inside of the right thigh extending to sheath and perineal region, where there was very considerable œdema. Thinking that pus would form, I ordered the parts to be well fomented twice a day, and as the temperature was 104F., I prescribed soda sulph. and pot. nitr. in the drinking water twice a day. The horse was feeding fairly well, but was beginning to lose flesh. I diagnosed the case as irregular strangles. I saw the colt again on 26th September, when the swelling was still hard, and the surroundings much the same. October 5th—Swellings of sheath, &c., much less, but that of thigh still hard and somewhat increased in size.

I was informed that the animal would occasionally show signs of abdominal pain more or less severe. and lasting only a short time. The temperature still kept at about 104F.

From the evidences of abdominal pain, from the continued high temperature, and from the progressive wasting, I now formed the opinion that the animal was suffering from some organic disease, such as abscess or tumour of some of the abdominal organs, and told the owner that I did not think that his horse would recover, but asked to be informed if the swelling got any softer.

I saw the case again in about a week, when I found the patient still losing flesh, the pains more frequent and more severe, the temperature still about 104. The colt was seen at intervals of a week until his death on November 11th. A fortnight before he died another swelling began to form on the other side of the sheath and grew rapidly, and got nearly as large as the first. On November 8th septic pneumonia set in, to which the animal succumbed.

Post-mortem examination held November 12th. Heart apparently healthy; lungs in a condition of intense inflammation, full of blood, and nearly black in colour. Liver slatey-blue in colour; irregularities on its surface, and consistence of the organ greatly increased. Mesenteric glands all were hypertrophied, they varied in size from a pigeon's egg to a turkey's. Stomach and bowels seemed healthy. Spleen was in itself apparently normal in size and structure, but depending from its surface was a very large tumour. Adhering to the bodies of the lumbar vertebræ, between the kidneys, was another very large tumour; it was most extensive on the left side, where it involved the structures leaving and entering the kidney. There were two similar but smaller tumours in each groin. On the brim of the pelvis there were two abscesses, one on either side, each of which contained a quantity of inspissated pus.

History.—The subject was a bay Clydesdale Gelding, belonging to Messrs. Scott & Sons, Maistudie, two-and-a-half years old. He was in good condition when turned out to grass about the beginning of the summer. Shortly afterwards, however, he seemed to have caught a cold, and coughed more or less during the whole summer. No notice was taken of this until about a month previous to my being called in, when the colt was put under cover during the night. The swelling in the right groin was then just beginning to form, and he was slowly losing condition; apart from this he seemed all right, and was a very well-grown colt. His dam had a very bad attack of laminitis shortly after he was foaled, but he seemed to do well, and was a very good colt when I castrated him as a yearling, and he did well after the operation.

[The tumour involving the kidney as well as the spleen with its tumour were examined, having been forwarded by Mr. Hutton. The kidney tumour weighed ten pounds, the ureter compressed by it was greatly dilated next the kidney, as also was the pelvis of the kidney, the organ itself being greatly enlarged. On section the tumour showed branching masses of very pale pinkish tissue, enclosing islands of caseous material.

The spleen tumour was smaller, but its structure was quite similar to that involving the ureter. On section the spleen, which was of normal size and consistence, seemed healthy; the malpighian bodies, perhaps, more prominent than usual. Cover-glass preparations of the softest part of the caseating mass, stained by the Zuhl Neelssen method, showed myriads of the tubercle bacilli, arranged, as is usual, when they attack the horse singly and in big rosettes.]

FOREIGN BODY IN THE PHARYNX OF A DOG.

BY NEMO.

An aged Airedale terrier was brought to the College for treatment, and exhibited the following symptoms:—The animal is dull, and occasionally holds the head on one side, in the position assumed by dogs suffering from canker of the ear. Complete loss of appetite, inability to swallow. A little glycerine administered was immediately rejected, and produced coughing and retching. The dog stood on its hind legs and violently scratched its jaws and face with its fore feet. It lay on the ground, and, putting its head between its fore-paws, tore the sides of the face with them as if it would scratch its eyes out. There was very little salivation. A careful and prolonged examination of the mouth and pharynx was made, but nothing was found to account for the symptoms. The dog was rather violent, and a narcotic was given, in the form of a strong dose of chloral, preparatory to passing a sound into the stomach. On again exploring the pharynx, after pulling the tongue well forward, a thin, hard substance was detected sticking out of the very back of the tongue on its left side. Pulling the tongue well over to the right side, and as far forward as it could be, after a little manipulation with the index finger I brought out a piece of black sewing cotton and a needle. The point of the needle had pierced the tongue in the position indicated above, and subsequent jaw movements and expulsatory efforts had driven it into the organ almost up to the eye. The cotton had been swallowed. Immediate cessation of the symptoms and recovery followed the removal of the offending body.

INFLUENZA WITH PECULIAR PREMONITORY SYMPTOMS.

BY NEMO.

OCTOBER 2ND, 1895. Called at night to attend a horse which the messenger said was suffering from colic. Found the animal, which had just come in from work, showing symptoms of mild abdominal pain, curling the tail, attempts at lying down, looking round at the sides, inappetence, pulse 45, temperature 100·3. As well as the colicky symptoms I noticed that the lower part of the face—about the nostrils and upper lip particularly—was greatly swollen. Swelling about the eyes; the left one was completely closed by the œdema. On the trunk and upper parts of the limbs, weals, some as thick as the finger, some as thick as the wrist, and on different parts of the chest and abdomen big diffuse patches of œdema.

Diagnosis: Urticaria from intestinal catarrh. Gave a colic draught and a pint of oil, and left instructions that I was to be called if the pain returned. (The horse seemed free from pain soon after getting the draught.)

Next day on visiting the patient I found that all the swellings had disappeared, the appetite had returned, and perfect recovery seemed assured. Left some bicarbonate of soda powders to be given night and morning. Pulse and temperature were now normal.

The following day to my astonishment I found the horse with a temperature of 105, pulse 55, respiration accelerated, anorexia, prostration, and the other symptoms of influenza, and a bad attack of this disease developed. The temperature remained between 105 and 106 for a week; after that the animal gradually recovered, and was at work again in three weeks.

HUISH INSTRUMENT CASE.

WE have received, through the courtesy of Mr. Huish, a very compact and well-arranged instrument case. It contains an excellent assortment of instruments, four knives fitting into one handle, scissors, forceps, probe, director, needles, suturing material, all contained in a metal case. Everything is of metal, there is no wood, horn, or leather, so that asepsis is easily obtainable. We have great pleasure in recommending it to our readers. The price is moderate.

THE SIXTH INTERNATIONAL VETERINARY CONGRESS, HELD AT BERN (SWITZERLAND), SEPTEMBER, 1895.

(*Continued from page* 324.)

WE again abridge from the *Berliner Thierärztliche Wochenschrift* the report of the Congress as follows :—

The fifth sitting (20th September), at which Professor Berdez presided was a long and anxious one, occupying altogether eight hours. The first subject of discussion was pleuro-pneumonia, and a great number of papers bearing thereon had been sent in from nearly all the countries of Europe as well as from America, but as the greater number of the writers were not present and as the members present had had the opportunity of reading the printed papers, Dr. Hirzel of Zürich gave a summary of them to the meeting. The general drift of the papers, he said, was decidedly in favour of a complete destruction of affected herds; only by such vigorous measures could one hope to become master of the disease. In the discussion which followed, M. Leblanc said that, while agreeing generally with Dr. Hirzel, he thought inoculation might be advisable in special local circumstances. Dr. Willems of Hasselt (Belgium), of course, manfully defended his system of inoculation but he found no supporters, whilst the contrary opinion was received with loud applause; indeed, no question that was before the meeting received such thorough approval, the members being practically unanimous. Dr. Lothes explained the mode of operation in the Rhenish Provinces in the case of an outbreak of pleuro-pneumonia. The whole herd is valued and if the owner is willing to slaughter it at once he receives 20 per cent. of the value from the fund set aside for that purpose. The owner cannot be compelled to slaughter the animals, but no one has as yet refused to do so, for, although the reduction in value of the slaughtered animals is not covered by the 20 per cent., yet when everything is taken into account the owner finds he gets about 75 per cent. of the total value, and he thinks it better to submit to that than to have an embargo laid upon his animals perhaps for months. Care is, of course, taken to inform the owner that this embargo will be enforced with the utmost severity. This very interesting and keen discussion ended in a recommendation to all Governments to have nothing to do with inoculation for pleuro-pneumonia, but to proceed at once to the extirpation of infected herds.

The last subject of discussion was the treatment of the flesh of tuberculous animals. All the writers of the papers on

this subject were present except Professor Ostertag, of Berlin; these others were Drs. Butel (France), Fleming (England), Guillebean (Switzerland), and de Jong (Holland). It had been anticipated that a sharp controversy would take place on this subject, as it has not been sufficiently expiscated from the scientific point of view, and there are serious difficulties on the side of its practical application. It was expected that a conflict of opinions might take place between French surgeons, as represented by M. Butel, and Dutch surgeons, as represented by M. de Jong, on the one hand, and German surgeons on the other, the Frenchmen wishing, as far as possible, destruction of the flesh in *every* case of tuberculosis, and the Dutchmen, *at least* sterilisation, whilst the Germans wished to limit the comdemnation of flesh, as far as might be practicable. In order to avoid a collision, Dr. Lydtin (Privy Councillor of Baden) had taken the wise and charitable precaution of holding a special meeting the day before, in the hope of harmonizing the contending opinions. The result of these tedious negotiations was a series of motions which were afterwards put to the meeting and adopted.

After the various advocates had stated their case, the discussion began. Mr. Macfadyean stated that opinion in England was divided. He disputed M. Butel's assertion that the flesh of all tuberculous animals was prejudicial to health. The English Commission had decided that after removal of the diseased parts the flesh was quite suitable as food; he did not, therefore, see why it should be destroyed. M. Nocard recommended a compromise (see below), and was personally of opinion that the flesh seldom contained the virus. Even M. Trasbot was of opinion that, although the flesh did, indeed, contain the tubercle-poison, yet this poison was rendered innocuous by the gastric juices. Mr. Nogueira stated that in Portugal the flesh of all tuberculous animals was condemned, and had been so since 1886. In the Lisbon slaughter-houses 5 per cent. of the cattle were found to be tuberculous; the wild bulls for the bull-ring were frequently tuberculous. Dr. Lanzillotti, of Milan, said that in Italy public slaughter-houses were established in 1891; he recommended, with Mr. de Jong, that the flesh of all tuberculous animals be sterilised. Mr. Sigmund, of Bâle, Director of Slaughter-houses, proposed the following resolutions, namely: Destruction of the flesh of all animals generally tuberculous, and, at the same time, emaciated; Sterilisation of the flesh of animals not emaciated, but showing extensive tuberculosis;

Free sale of the flesh of animals showing restricted tuberculosis. M. Chauveau pointed out that so far back as 1868 he had proved, by experiment, the non-poisonous nature of the flesh in itself, but had shown that the lymphatic glands of the flesh, even in well-fed animals, might contain the disease-virus, on which account he had advised that special attention be directed to the lymphatic glands. M. Lorain was against stringent measures as, in his opinion, the flesh was hurtful only when it contained foci of tuberculosis. Dr. Lydtin reminded the Congress that their decisions of former years on this subject had guided the Governments of most States in framing their regulations, and therefore the present Congress must not vacillate. He went on to recall the facts that a hundred years ago tuberculous flesh had been everywhere excluded from public consumption; then opinions had changed, and about the middle of this century regulations had been framed for its use; then Koch's discoveries had once more turned the current of opinion against it. The destruction of all tuberculous flesh, he said, though in itself desirable, was impracticable, but everything distinctly dangerous to public health must be prohibited. Koch had once said that whatever is disgusting is dangerous to health. Mr. Edelmann was against obligatory sterilisation; in Dresden 1,200 out of 6,900 cattle were found to be tuberculous, but 90 per cent. of their flesh was sold to the public. M. Morot said that sterilised flesh soon decayed and stood in bad reputation with the public. The following resolutions were adopted: (1) That the Congress recommend all Governments to institute compulsory inspection of meat; (2) That the flesh of all tuberculous animals ought to be subjected to special regulations; (3) When these regulations lead to condemnation, the owners must be suitably indemnified, if they submit to the provisions of the laws then in force (last clause M. Nocard's); (4) Condemnation occurs when the lesions, by their extent and character, give suspicion of being dangerous to health (eight members voted against this); (5) Condemned flesh must not be sold as food [Flesh is to be condemned (*a*) When the animal is emaciated; (*b*) When the flesh has a bad appearance; (*c*) When tuberculous lesions are found in the muscles; (*d*) When serious lesions are found in several of the viscera (18 members voted against this.)]; (6) The flesh of tuberculous animals, if intended for food, ought to be sterilised to an extent proportionate to its condition, and that, if possible, in places specially appointed for the purpose (adopted by 57 votes to 35); (7) Governments are respectfully

requested to provide sterilising apparatus. A further motion by M. Trasbot was accepted with acclamation, namely, that in every country a Commission be appointed to settle the principles on which veterinary inspectors of slaughter-houses shall permit the flesh of tuberculous animals to be sold for food, that is, whether they are to condemn it partially or altogether.

We would point out that resolution 5 (*d*) is extremely noteworthy, as it deals with those cases, still disputed, in which there is, even in well-nourished animals, tuberculosis of several of the viscera, or, in other words, of the ventral cavities; here the difficulty will be found of fixing regulations to be everywhere binding, and of avoiding complaints about condemnation. The resolution speaks of "serious" lesions in the viscera (not organs), but it will be for the expert to decide what lesions are serious enough to justify condemnation; thus the Congress gives no directions for the settlement of these doubtful cases. The Congress gives likewise no precise directions for the sterilising of meat, but merely advises that this be done according to circumstances. This matter is of much importance, as sterilisation differs but little from destruction, only a fraction of the value being saved thereby. Public attention ought to be directed to this aspect of the question. It is noteworthy, also, that the Congress pronounces distinctly in favour of compensation. Of course, this must not be mere mutual insurance amongst stock-owners, as in the case of glanders and pneumonia, whereby the loss is simply spread over the whole body of agriculturists. With regard to tuberculosis the case is different. Seeing that this disease in cattle has such an ominous significance for humanity, the struggle against it must be regarded as no mere agricultural question, but as one that affects the whole community, and the attack must be made with the help of State funds.

CHLORIDE OF BARIUM.

BY NEMO.

THE treatment of colic (due to impaction of the bowel by accumulation of fæces) by the intravenous injection of barium chloride, which has recently been recommended by Dieckerhoff, is the application in practice of a very well-known action of the drug in question. In Lauder Brunton's "Materia Medica," page 646, it states that, "when injected into the

circulation, it causes contraction of the involuntary fibres of the bladder and intestine, so that the lumen of the latter may be almost completely obliterated." The following record of three cases in which it was tried may be of interest:—

Big aged cart gelding admitted to the New Vet. Col. Infirmary, suffering from a very acute attack of colic; the animal had been attacked four hours before admission. The usual treatment (sedatives, fomentations, enemas) having failed to relieve the symptoms, chloride of barium, 11½ grains, dissolved in 80 drops of distilled water, was injected into the jugular. Ten minutes afterwards the animal stretched himself to the full extent (assumed the position so characteristic of Hackney stallions in the show ring), remaining thus postured for some time. There were loud borborygmal sounds, soon flatus, and, directly afterwards, a little fæces were expelled, the latter with force. In twenty minutes from the time of administration, the patient passed small quantities of fæces five times. Ten hours after admission the animal died, and on *post-mortem* examination, there was found acute inflammation of the small intestines, their contents being bloody, and the walls of the bowel greatly infiltrated. The colon which contained a large quantity of ingesta was ruptured close to the cœcum.

A St. Bernard dog with an inveterate skin disease was sent for treatment with instructions that if no marked improvement occurred in a short time it was to be destroyed. Confinement in kennel produced constipation, and chloride of barium gr. 2½ dissolved in 30 drops of distilled water was injected into the jugular. In five minutes I noted acceleration of respiration, colicky pains, lying down and rising frequently, Hackney stallion posture (most marked in this case), ten minutes after the injection defecation commenced accompanied by much tenesmus, and the dog passed fæces in smaller or larger quantity 12 times in half-an-hour. In an hour he seemed all right, and was destroyed by one drachm of Scheele's hydrocyanic acid. *Post-mortem:* The intestines entirely empty. The last part of the colon was contracted and incompressible, it felt almost like a piece of tendon.

Old pony (a dissection subjection), received by intravenous injection 10 grs. of barium chloride. In ten minutes he was sniffing about on the ground, curling the tail, looking round, lying and rising, rolling over. Soon he began to pass flatus and fæces, and defecated six times in half-an-hour from the exhibition of the dose. In an hour he was himself again.

Editorial.

THE readers of the VETERINARY JOURNAL will find in our correspondence columns, a letter from Messrs. Brand and Bowes, M.R.C.V.S., Leeds, bearing on a prosecution instituted against them by the Society for the Prevention of Cruelty to Animals, for cruelty to a horse. The case is one of some interest and importance to veterinary surgeons, as it shows the dangers that overshadow them in their professional work. Not only from the misdirected zeal of the officers of the Society, but also from a source that it pains me to point out—from members of their own profession. Messrs. Brand and Bowes, acting to the best of their judgment, ordered a patient suffering from mange, that unfortunately had been cast in its stall on the night previous to its removal, to be walked quietly a distance of 4½ miles to a grass field. Some distance from its destination the horse collided with another and fell. The evidence of the man leading it was that two of the Society officers pounced upon him, who would not allow him to lift the horse or give him any assistance to do so. That a horse may be in a weakened state from illness and still perfectly able to walk quietly, indeed, sometimes beneficially, is the experience of all practitioners, but, that while in transit an unforeseen accident to a patient should render men of blameless character and high professional reputation, as was the case in this instance, liable to an odious prosecution for cruelty, should and does evoke my warmest sympathy with them as a professional brother.

While being in full accord with the motives that are the *raison d'être* of the society, its methods I cannot always agree with, and it is a moot point whether it should be permitted to harass any professional man, by raising these frivolous actions with impunity. It is a question that should be submitted to a legal test.

Judging the merits of the whole case as published in the daily prints, I am of opinion that no cruelty could be laid to the charge of Messrs. Brand and Bowes. I must express my regret and surprise that, on mere hearsay evidence, a veterinary surgeon should have been found who endeavoured to aid the prosecution to inflict, what would have amounted to a very serious injury to those gentlemen, his professional brethren, whom I heartily congratulate on their victory.

THE Editor begs to refer "Inquirer" to the reprint of "The Charter of the Royal Veterinary College of Ireland,

1895," in this issue of the JOURNAL. He is not in a position to afford any further information on the matter.

The Editor, being anxious to gain further information on "Redwater" in cattle, will feel much obliged to his professional brethren, if they will communicate with him regarding this disease.

Proceedings of Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

A MEETING of the council was held on Saturday, the 9th ult. Present:—Mr. James F. Simpson, President, in the chair, Professors Dewar, Edgar, McFadyean, McCall, Penberthy, Pritchard, and Shave; Messrs. Abson, Bower, Dollar, Elphick, Fraser, Hartley, Hunting, Kidd, Locke, Mason, Mulvey, Trigger, Wragg, and A. W. Hill (Secretary).

The SECRETARY read the notice convening the meeting.

On the motion of Mr. FRASER, seconded by Professor MCCALL, the minutes of the previous meeting were taken as read and confirmed.

Correspondence—The Pharmaceutical Society.

The SECRETARY said that Mr. Thatcher the solicitor, had received a letter from the Pharmaceutical Society of Great Britain stating that a conference was going to be held in connection with a deputation to the Board of Trade, *re* the Companies' Acts Amendment Bill, and asking Mr. Thatcher to get himself appointed to represent the College, together with the President or other members of the Council. Mr. Thatcher now wrote to the College saying that he did not think there was any necessity to appoint him as a delegate as that had been done at a Council meeting some time back, and he presumed his appointment remained. He thought, however, that it would be as well that the matter should be brought before the Council in order that he might receive formal authority.

The PRESIDENT: I am afraid I am not in a position to explain thoroughly the object of this deputation to the President of the Board of Trade, but I am sure that the Pharmaceutical Society, as well as ourselves, desire to do away as much as possible with the formation of companies which give to themselves all the powers which individual members of our profession, or the pharmaceutical profession retain, though the members of those companies have no qualification whatever; in other words these companies start under the belief that although we may proceed against individuals we cannot proceed against them as companies. I think you will consider it advisable that there should be some representative from this Council to attend as a deputation with the Pharmaceutical Society. I certainly think that as the solicitor is so well acquainted with all the details he ought to be the one to represent us.

Mr. ABSON: Is this not a subject which ought to be taken up by the medical profession equally with ourselves?

The PRESIDENT: It is being taken up by them.

Mr. HUNTING: I propose that the President be our representative, and as I have heard no suggestion whatever in favour of the solicitor being sent, that the President go by himself. Veterinary surgeons so far have not one single complaint to make of any company formation. Both the other bodies have complaints to make, and all the talking will be in their hands.

Professor PENBERTHY seconded Mr. Hunting's proposition.

The PRESIDENT: Is there any amendment?

Professor EDGAR: I propose as an amendment, "that the solicitor be asked to attend with the President."

Professor MCCALL seconded the amendment, which was agreed to.

Postponed Examination Fees.

A letter was read from a student saying that he was unable to appear at the May examination through illness, and asking if his fees might hold good for the Christmas examination.

Mr. HARTLEY moved "that on the production of a medical certificate to the effect that he was unable to present himself in May in consequence of illness, this student be allowed to present himself for the Christmas examination without further fees."

Professor MCFADYEAN seconded the motion.

Mr. HUNTING moved as an amendment, "that the student be allowed to present himself in December at the Christmas examination without the production of any certificate."

On this amendment being put, it was declared to be lost; and the original motion was agreed to.

British Institute of Preventive Medicine.

A letter was read from the British Institute of Preventive Medicine pointing out that they had not received any official notification of the grants made by the College and some of the veterinary societies, and asking whether it was necessary to make any further application for them.

Mr. HUNTING explained that the reason they had not acquainted the Institute with the vote was because they were expecting to receive other grants from different veterinary societies, and he moved that the Secretary be instructed to write to the British Institute of Preventive Medicine informing them that the Council intended to contribute £100 and that it was waiting to receive certain expected donations from other veterinary societies and that the Institute would be communicated with before the end of the year.

Mr. LOCKE seconded the motion, and suggested that the Secretary should write to all the societies asking if it was their intention to subscribe. Agreed to.

Examiners' Specimens.

The PRESIDENT: We now have to consider a letter from Captain Smith in which he says that a year or two ago the examiners in class B were asked whether there was anything in the shape of specimens and material which they would like the College to provide for their examinations. He says he has consulted with his colleague, and he now asks for a microscope, a box of histological specimens, and an artist's lay model of a horse for the purpose of examining on locomotion; and whether there is any objection to the histologists being furnished with microscopic material which can he taken from school to school.

Mr. HARTLEY: I beg to propose that these things be bought for the use of the examiners if the cost of the model is not excessive.

Mr. DOLLAR: I will second that. I do not think the total cost would exceed £12 or £14.

Mr. HARTLEY: I will add to my proposition that the sum is not to exceed £15.

Mr. ELPHICK: I move as an amendment that the matter be referred to the Examination Committee, with power to act.

Professor MCCALL: May I ask if Captain Smith has been refused microscopes at the College? I am not aware of it. We could give him a dozen microscopes and any number of specimens.

Professor PRITCHARD: I should propose that the examiners provide their own microscopes.

Professor DEWAR: I do not see any use in providing microscopes at all I do not think any school would refuse to supply the examiners with them, they can have a dozen if they like.

Professor SHAVE: I second Professor Pritchard's proposal that the examiners provide their own microscopes and microscopic specimens. The examiners have to examine, and I think they should provide themselves with the necessary instruments.

The PRESIDENT: I will now put Mr. Elphick's amendment:—"That the matter be referred to the Examination Committee, with power to act."

On this amendment being put to the meeting, it was declared to be carried.

Professor PRITCHARD'S amendment was then put and lost, and Mr. Elphick's amendment was carried as a substantive proposition.

The PRESIDENT: We now have to consider a letter with reference to the circular which was received from Mr. Lynch in Ireland. It will be within your recollection that you instructed the Secretary to send the whole of the correspondence, or rather to send the circular received from Mr. Lynch, to the Board of Agriculture. That was done, and we have received a letter from the Board of Agriculture stating that it has nothing to do with it, and that it had better be sent to the Clerk of the Council, Veterinary Department, Privy Council Office, Dublin Castle. I thought it better that we should take your wishes on the matter, because this gentleman holds an appointment in Ireland, and may not care to have his letters sent to Dublin Castle.

Prof. PRITCHARD moved that the correspondence be returned to the writer of the letter, together with a copy of the letter received from the Board of Agriculture.

Prof. MCFADYEAN seconded the motion.

Mr. LOCKE moved as an amendment that the letter be sent to Dublin Castle.

Mr. FRASER seconded the amendment, which was agreed to.

Appointment of Secretary to the Board of Examiners for Scotland.

The PRESIDENT: We now have to proceed to the appointment of a Secretary to the Board of Examiners for Scotland. Perhaps, however, if the Chairman of the Examination Committee sees no objection, it would be as well that you should know what the replies of the examiners and the late secretary were to the letter which you instructed our secretary to write to them with reference to their acquiescence, or otherwise, in the suggestion that was made that we should allow the matter in connection with the unfortunate business to drop.

Prof. MCFADYEAN:—I submit that there is no cogent reason why this should be taken before we proceed to the business which comes next upon the agenda.

THE PRESIDENT: I thought it would clear up the whole matter if you had this correspondence now, otherwise at the present moment the members of the Council will not know whether our late secretary has been improperly blamed, or whether our examiners have been improperly blamed.

The correspondence was then read, consisting of letters from Mr. Rutherford, Prof. Williams, Dr. Fleming, Vet.-Capt. Smith, and Dr. Peacock.

The PRESIDENT:—We will now proceed to the appointment for a secretary to the Board of Examiners for Scotland. You are aware that the fact of a vacancy having occurred was advertised. Applications have been received from the following gentlemen:—Mr. Rutherford, Edinburgh; Mr. McIntosh, Dalkeith; Mr. Gray, Edinburgh; Mr. Crichton, Lisburn, Ireland; Mr. Baird, Edinburgh; Mr. De Jong, Edinburgh; Mr. Millar, Partick; Mr. Hill, Glasgow; Mr. Anderson, Glasgow; Mr. Frew, Glasgow; Mr. Player, Edinburgh;

Mr. Dunbar, Aberdeen; and Mr. Golden, Eastbourne. Will you proceed straight away to the ballot, or does anyone wish to urge the claims of any of these candidates upon the notice of the Council?

Mr. TRIGGER:—I move that we go straight away to the ballot.

Mr. MASON seconded the motion, which was agreed to.

Prof. DEWAR:—There must be many members of the Council who know nothing as to the qualifications of these candidates. Have there been any testimonials or qualifications sent up to the Council?

Prof. PENBERTHY:—It is not necessary.

Prof. EDGAR:—Will there be any opportunity of discussing the relative merits of the two men who are at the top before you finally decide?

The PRESIDENT:—Yes, if it is your wish. The person obtaining the highest number of votes will not necessarily be elected. He must have a majority of the members present in his favour.

A ballot was then taken, with the following result:—Rutherford, Baird, De Jong, Player.

The PRESIDENT:—Mr. Rutherford heads the list, but a second ballot will be necessary because there has to be a majority of the members present.

On a second ballot being taken, the voting was as follows:—Rutherford, Baird.

The PRESIDENT:—I declare Mr. Rutherford to be elected.

Proposed Deputation to the Board of Agriculture.

The PRESIDENT:—The next business is to approve or alter a draft representation to be made to the Board of Agriculture by the deputation appointed by this Council. You are aware that you appointed Mr. Hunting, Mr. Kidd, and myself, as a deputation to wait upon the Board of Agriculture with reference to the arrangements now existing at the Animals' Department of that Board, and we desire on account of the many and sometimes extreme views entertained by members of the profession, to consult you before making our representations. There are members who desire an alteration in the name of the Department, there are those who desire not only an alteration in the name but also in the direction of the department, and there are other views entertained which would carry us much further. We therefore ask you whether you approve of our representing merely that the profession is desirous, (1) that the Veterinary Department be restored; (2) that the Department be under the direction of a veterinary surgeon; (3) that another member be added to the professional staff. It is for you to say whether we have proposed too much or too little.

The SECRETARY read the Report, as follows: "The Committee again consulted to-day, and should the Council approve of the recommendations, they are prepared to submit their reasons to the Board of Agriculture for the suggested alterations being made, and meanwhile they request the Secretary to write to the Rt. Hon. W. Long, the President of the Board of Agriculture, as to a convenient date to receive the deputation."

Prof. PENBERTHY: I would suggest that the last proposition should be "That the Veterinary Department be strengthened," not that one member should be added, or ten, but that it should have whatever strength is necessary. With that alteration I move that the suggestion of the members of the deputation be adopted.

Mr. HARTLEY seconded the motion, which was agreed to.

Compulsory Notification of Contagious Diseases.

The PRESIDENT: I have to report to you that in accordance with your wish the Secretary issued 2,758 circulars to members of the profession asking them

to intimate in their reply, which was to be made at an early date, whether they approved or disapproved of the adoption of the compulsory notification of contagious diseases in animals. To the circulars sent out, 787 replies have been received. They may be classified thus: Notices returned in favour of adopting the Act 588, but some on certain conditions; notices returned not in favour of adopting the Act unconditionally 147; notices returned not in favour but conditional 38; notices returned where no opinion whatever has been given 13. Total, 787.

Mr. HUNTING: Can you tell us about the conditions?

The PRESIDENT: The unconditional we need not refer to. These are classified as near as they could be got at. Fourteen members say that they are in favour, providing that qualified veterinary surgeons are employed to carry out the work; two are in favour, provided that the duties of inspection are confined to members of the profession; ten are in favour, provided adequate fee for notification is paid; seven are in favour, provided that every M.R.C.V.S. is appointed inspector in regard to their own cases; six are in favour that notification and inspection be carried out throughout the district councils and imperial veterinary officers and revision of the whole of the animals' department.

Mr. HUNTING: What does that mean?

The PRESIDENT: I do not know. There are six, at any rate, of that mind; five are in favour provided glanders and farcy only are dealt with; six are in favour if the interests of veterinary surgeons are justly considered; three are in favour provided that compensation be given to owners; and two are in favour if the matter is taken out of the hands of the council. I do not know what council they refer to. Then there are 5 which are difficult to classify, and they are classified as "conditional." Those not in favour of compulsory notification:—147 need not be dealt with; 22 were opposed to it under the existing regulations of the Board; 8 are opposed to it, giving many reasons against; 1 opposed to it except in cases of glanders and farcy; 2 practitioners think that clients' notification ought to be quite sufficient; 2 say reasonable compensation to owners is essential; 2 say they would not adopt it unless the inspectors to whom notification has to be made are veterinary surgeons not in private practice; 1 opposed it unless the M.R.C.V.S. be an inspector in his own practice and notify direct to local authorities. That deals with the 185 classified as against. I have a letter from Mr. Godfrey who lives in the Channel Islands, in which he says he is in favour of compulsory notification, but the Act would have no effect there unless the Channel Islands were specially mentioned, Then we have a letter from Mr. Gibbings, also in favour of the principle of compulsory notification, but he hopes that before the Council expresses an opinion on the adoption of such an Act they will make themselves acquainted with some particulars relative to its professional working. The superintendent of police acts as local inspector, and the services of veterinary surgeons are seldom called into requisition unless a prosecution is imminent. The fees allowed are miserably inadequate; and possibly if such an Act were adopted we should suffer the humiliation of being compelled to notify to police officers against our clients' wishes. Mr. Faulkner writes saying he is unable to answer our question either in the affirmative or negative, because, (1) The two professions, the medical and veterinary, are not identical in this respect; (2) The anomalous regulations at present in force *re* Glanders and Farcy Orders; and (3) prospective orders *re* Contagious Diseases of which we at present know nothing. Mr. Stephenson writes saying he is not in favour of the notification of disease; (1.) Because it will place veterinary surgeons more in the hands of county councils, who now employ policemen and other non-qualified persons to act as inspectors under the Contagious Diseases (Animals) Act, to the loss and prejudice of

qualified men; (2.) The proposed fees, in all probability, will be so small that they would not be worth the trouble, and after the certificate of disease was issued, all other work in connection with the case would be carried out by laymen, as it is by the county councils in connection with sheep scab, police officers often declaring a case of sheep scab, and only calling in the veterinary surgeon when they require his certificate to produce in court. He trusts the Council will do all they can to defeat the proposed change. I have also a long letter from Sir Henry Simpson. He says that he is of opinion that an intelligent public will before long force notification of contagious diseases upon the legislature, but that it would be unwise of the Council to assent or dissent immediately, as they should take advantage of the very favourable opportunity presented by the Board's letter to formulate a demand or request for the question of the status of veterinary surgeons in relation to contagious disease, to be fully considered. Reasons for the suggested alteration should be drawn up by the Council, and submitted to various M.P.'s, some of whom should form a deputation to the Minister of Agriculture on the subject. Should the Council think well to accept notification, some conditions should be added, and amongst them: (1.) The R.C.V.S. shall be consulted as to what diseases shall be termed contagious diseases, just as they were by the Royal Commission with regard to hereditary diseases for horse breeding; (2.) The notice required shall be given to a M.R.C.V.S.; (3.) An owner of live stock shall be bound to take all reasonable precautions that his stock is free from contagious diseases, and shall be liable to a heavy penalty for neglect of such precautions; (4) An owner who neglects to have any newly purchased or received stock inspected by an M.R.C.V.S. within —— days of arrival on his premises, and all other stocks within —— months at least shall be deemed to have failed to take reasonable precautions; (5) The Act (notification) shall be adopted throughout the kingdom; (6) Veterinary surgeons shall hereafter be exempt from serving on juries." With those letters before you, if you think we are in a position to give an answer to the Board of Agriculture with regard to this subject, will someone make a proposition?

Mr. Bower: As you may be aware, several members met in Norwich to discuss this subject, and the paper was sent to this Council accordingly. They thought they would be giving the Board an opportunity of letting them know that we are dissatisfied with the way we have been treated. I do not think anyone attended that meeting who objected to notify 8 contagious diseases—on conditions.

Mr. Trigger: After the course we have adopted, I take it that the Council cannot consistently go in the face of the replies they have received. The majority of those replies are in favour absolutely of compulsory notification, and I think, therefore, we are bound by it. There are some excellent suggestions in Sir Henry Simpson's letter, one of which is with regard to serving on juries. I would suggest that a reply be sent to the Board of Agriculture saying that the Council are, on certain conditions, in favour of compulsory notification of contagious diseases, and that a sub-committee be appointed to suggest what is wanted in return, their report to be laid before us at our January meeting. I will move that a letter be written to the Board of Agriculture saying that under certain conditions we are in favour of compulsory notification of disease, and that the matter be referred back to the General Purposes Committee to formulate those conditions.

Mr. Dollar: In rising to second Mr. Trigger's motion, I should like to say that, so far as I can gather, the results of this circular which has been issued, is merely to show that a certain proportion of the members of the profession, amounting apparently to one-sixth, is in favour of compulsory notification. I think it is our duty, however, not to stop at the acquiescence or refusal on the part of the members, but to add, so far as we possibly can from our own

stores of knowledge and experience, those safeguards which are likely to benefit us when we are called upon for our reply to the Board of Agriculture. I certainly agree with Sir Henry Simpson that the time has now come for making our views heard in connection with certain points which have been proved to be a source of great vexation to us in the past, and I think it would be a great oversight on the part of this body, did it neglect to take advantage of it. I am of opinion that Sir Henry Simpson's suggestion that the Act be general, and not local, should receive our best attention. A further point, and one which, I venture to say, is of very great importance indeed, both to country and town practitioners, is this, we all, unfortunately, know that in the past our experience with contagious diseases, like glanders, has not always been of the happiest. We have a case which shows no external manifestations, and it is sent away for slaughter quite unsuspectingly. It is detected at the slaughter-house by the inspector, and, in my own particular case, the following has happened—the owner has been warned that he sent away a glandered horse, and that he is liable to a penalty of £20; but the Central Authority has not stopped short there; it has further served a notice on the veterinary surgeon in attendance (in this case myself), warning him that if in future such action should again arise, he will be held responsible for it, and that he had better be careful in what he does. In my own case, I did not wait until further attacked, but I attacked the Central Authority, and I am glad to be able to say that I extracted from them an apology and retraction. This, however, is not always the fate which the unfortunate veterinary surgeon meets with. It is frequently a man of not much means and unable to fight, and the authority which knows very well the facts of the case either ignores him altogether or continues its threats, which they know he cannot resist. I therefore think that in any Act provision should be made for some protection to the veterinary surgeon. The suggestion has been made by a very eminent authority, who has considerable experience in these matters, that a veterinary officer in each district should be appointed who should do no other practice. That would certainly be one way of relieving us of great anxiety. As you all know, the real cause of friction arises from the inspector endeavouring to use his position to the disadvantage of his professional brethren who are obliged to resort to him. If he were deprived of the power he is provided with, that temptation to abuse his position would be removed. The suggestion that we should endeavour to obtain immunity from serving on juries has my heartiest sympathy.

Mr. HUNTING :—I have an amendment to propose to Mr. Trigger's motion, viz., that the matter be referred back to the General Purposes Committee, that they be asked to draw up a letter to the Board of Agriculture expressing our general approval, but stating the conditions under which it would be most acceptable, and that that letter be submitted to the next meeting of Council.

Prof. EDGAR :—I should like to support Mr. Hunting's amendment, on the ground that there are one or two important points to which this matter would have no application, and especially bearing on glanders. For instance, I have private information of a man who possessed seven or eight horses of great value, worth £50 or £80 each. Those horses have been exposed to the infection of glanders and have re-acted to mallein, and having great confidence from a considerable experience of mallein. I should conclude that those horses are glandered. I conld not give a positive opinion, as an inspector or as a private individual, that they are not absolutely sound, because they would pass any test of soundness you might like to put them to. We ought to have some understanding in our official position as to what is to be done with regard to mallein in this matter, because the Board of Agriculture and the County Councils refuse to recognise the test as diagnostic, and we

should be open repeatedly to the charge Mr. Dollar has been subjected to. We only know privately that these horses have reacted to mallein. The County Council know nothing about it until they are shown clinical evidence. This matter has a very important aspect when its details are encountered in practice.

The PRESIDENT: Mr. Trigger's motion is withdrawn, and Mr. Hunting proposes that the whole matter be referred to the General Purposes Committee to report to the Council at the January meeting, and in that report the conditions upon which we should accept the Act are to be mentioned.

The motion was then put and carried.

Examination Committee.

The SECRETARY read the report of the Examination Committee from which it appeared that letters from the examiners and Mr. Rutherford had been laid on the table with reference to the subject of the friction at the recent examinations in Scotland, stating that in accordance with the wishes of the Council all parties had consented to willingly let the matter drop.

Mr. MULVEY: I beg formally to move the adoption of the report.

Mr. MASON seconded the motion, which was agreed to.

Committee on Bovine Tuberculosis.

The report of the Special Committee on bovine tuberculosis was read. It recommended the Council to lay before the Board of Agriculture the fact that the veterinary profession considered the time had arrived when tuberculosis should be included in the Diseases of Animals Act.

Mr. HUNTING moved, and Mr. MASON seconded, the adoption of the report.

Professor MCFADYEAN: Does the report mean that tuberculosis is to be scheduled and treated like swine-fever and glanders by slaughter of suspected animals and compensation?

The PRESIDENT: First of all to get this disease recognised as infectious, and scheduled.

Prof. MCFADYEAN: What is the good of getting it scheduled? Until we can recommend something more to the point than that we had better send no recommendation at all.

Prof. PENBERTHY: It must be scheduled first.

Mr. MASON: We have not got it scheduled yet.

Prof. MCFADYEAN: There never was a disease scheduled except in relation to special regulations.

Prof. EDGAR: The Privy Council raised three complete objections to scheduling the disease in 1888: (1) that diagnosis was difficult; (2) that there was great difficulty with reference to compensation of pedigree cattle; and (3) the improbability of the disease being finally extinguished. With the use of tuberculin, if the reaction is reliable, we can now get over the difficulty of diagnosis. On the second question of compensation, no doubt the point has weight with the Privy Council, owing to large herds of valuable pedigree stock which are known to be tuberculous. The main difficulty has been the diagnosis, and as with the assistance of tuberculin we can now claim to be fairly accurate in diagnosing tuberculosis, I propose that the disease shall be scheduled with the accompanying rules that obtain in all other scheduled diseases.

Mr. HUNTING: I cannot support Professor Edgar's motion, because it is too wide. I do not think he quite means that it should be treated as all other diseases are treated, because every disease is treated differently.

Prof. DEWAR: I should like to know what is proposed to be done if an animal brought to a slaughterhouse is found to be tuberculous? Is the farm from which it came to be marked as a suspected farm, or is it to be visited and the whole of the animals tested for tuberculosis, and the herd stamped

out? I have tested herds with tuberculin, and have had 95 per cent. of re-actions, and I have tested animals worth hundreds of pounds, and they have re-acted, and in a few years they have been healthy and refused to re-act. Do you mean to slaughter them out, or what do you mean to do?

Mr. HUNTING: I think it is necessary to go a little further than merely asking for the scheduling of this disease. What I would suggest is that we ask them to schedule tuberculosis as a disease under the Act for certain purposes. First, for notification by the owner. There is nothing objectionable in asking a man to notify the existence of a contagious disease, especially when it is dangerous to the human subject. I cannot therefore see what objection there can be to asking that tuberculosis should be notified by the owner. Then a question would arise at once as to what is or is not tuberculous. Until the Government which has to run the Act approves of mallein for glanders, and tuberculin for tuberculosis, and positively accepts the re-action as an indication of disease it is not for us to pick out animals—to get 90 per cent. that react and say they are diseased. It is evidence towards the fact but not of the fact. What we want is that a man when he has a clear case of disease which his veterinary surgeon tells him is unmistakably dangerous to the rest of the stock and to the human subject as well, should be compelled to notify to the authorities. Doubtful cases can be provided for, as in glanders, by calling them suspected and requiring the isolation of suspected animals. Again we may safely say that animals described as "wasters" which are clearly clinically diseased, have no right to live, and if we provide compensation even to the extent of something less than the whole flesh value of the animal, we are providing quite sufficient compensation for it. I should therefore say that the slaughter of all clinically diseased animals might be properly asked for. To summarise my proposition I will move as an addition to adopting the report that "in the opinion of this College tuberculosis should be scheduled in the Animals' Diseases Acts for the purposes of notification, isolation of suspected animals, and slaughter of all clinically diseased."

Mr. FRASER: I will second that. I would suggest, on Mr. Hunting's principle that half a loaf is better than no bread, that we recommend that all dairies from which milk is supplied for public consumption should be certified by a member of the veterinary profession as being free from tuberculosis. That would not involve great expenditure; it would be a practical thing which could be secured, and so far as we do understand the disease the danger to the human subject is more likely to arise through the consumption of the milk than the consumption of the flesh. We should urge that the public milk supply should be from dairy cows that are certified to be free from this disease, if, indeed, we can rely upon the tuberculin test, of which I am not so sure as my friend Professor Edgar. I would suggest that the recommendation be confined to the existence of tuberculosis in dairy cattle.

Mr. HUNTING: That is a distinct amendment to my proposition, and I shall not accept it.

Prof. EDGAR withdrew his proposition in favour of Mr. Hunting's.

It was then agreed to take the resolutions separately.

Mr. MASON seconded Mr. Hunting's resolution, which was then put from the chair as follows:—"That the report of the sub-committee appointed to investigate the matter be adopted, and that we further recommend that the disease be scheduled for the purpose of notification, the isolation of the suspected, and the slaughter of all clinically diseased animals." This was carried with one dissentient.

Mr. FRASER'S proposition:—"That measures be taken for the veterinary inspection of dairy cows with a view to guard against the transmission of tuberculosis to man," having been seconded by Mr. Hartley, was also agreed to.

Report of Jubilee Memorial Committee.

The SECRETARY read the report of the Jubilee Memorial Committee, which recommended that the Jubilee Memorial Fund should be closed on the 15th January, 1896, and also that when the fund was closed it should be handed over to the Council with a suggestion that the bursary fund should be added to it. The report stated that the President, Mr. Simpson, had privately offered, if the Council would accept it, to give £25 for a tablet, and the committee recommended that a sub-committee should be appointed to arrange for the preparation of the tablet, the committee to consist of Messrs. Simpson, Trigger, Wragg, Hunting, and Macqueen.

Mr. TRIGGER, in moving the adoption of the report, said: I hope that it will go forth to the profession that the fund is closing in January, and that the handsome impulse which has been given to it to-day by the President may be a stimulus to the profession, and that we may raise a sufficient sum to ensure a scholarship, and hand it over to the Council. At the same time I beg to give notice that at the next meeting of the Council in January I shall move, "That the Bursary Fund now set aside to establish a scholarship, and now lying idle, shall be added to the Jubilee Memorial Fund, or the Jubilee Memorial Fund be added to the Bursary Fund, and the whole be used for the purpose of founding a scholarship."

Professor PENBERTHY seconded the proposition for the adoption of the report, which was agreed to.

Mr. TRIGGER: I also beg to give notice that at the next meeting I shall move, "That the Council be called upon to decide where the tablet is to be placed in the College."

Mr. DOLLAR: I should like to propose "That a hearty vote of thanks be passed to the President for the handsome gift towards the erection of this tablet"—which will, I have no doubt, form an ornament to our Council Chamber—"that the matter be published in all the journals, and that the editors of journals be asked to pay special attention to it."

The proposition was seconded by Professor McCall, and carried with acclamation.

Notice of Motion by Mr. Mulvey.

Mr. MULVEY gave notice that he would move at the next meeting "That any students passing with honours in one or more subjects of the examination in any class shall be exempt from re-examination in those subjects in which he has obtained honours."

Motion by Professor Dewar.

Professor DEWAR: We have appointed a Secretary for Scotland, and I wish to move that the following should be given as an instruction to the Secretary, "That he be instructed to collect the fees of the students at the respective colleges; that his attention be called to bye-law 82, and if it is found impossible to supply copies of the record sheet the same night that the examinations finish they shall be supplied at least within 24 hours thereafter, and that he be instructed to intimate the result of the practical examination and to give out the diplomas as soon as the examination is finished, and that if it be found impossible to give out the diplomas the same night they shall be given out on the following morning." I call the attention of the Council to this because it has not been done in the past.

Professor MCCALL: I think it is only right I should say that all that Professor Dewar has asked for has been freely supplied by Mr. Rutherford to the Glasgow Veterinary College. I will second Professor Dewar's motion.

Mr. FRASER: Shall we take the resolution in parts? The first part is one to which I am rather disposed to object. I do not see why an official should be asked to go to the schools to collect the fees.

Mr. HUNTING suggested that the words "for the Christmas examination" should be added to the first part of the resolution.

The motion of Professor DEWAR, seconded by Professor MCCALL, "That the Secretary for Scotland be asked to collect the fees of the students at the respective colleges," with the addition proposed by Mr. Hunting, "for the Christmas examination," was agreed to.

The PRESIDENT: The next is, "That the Secretary for Scotland's attention be called to bye-law 82, and if it is found impossible to supply copies of the record sheets the same night the examinations finish, that they be supplied within 24 hours thereafter."

Mr. MULVEY: I should like to hear what the bye-law refers to.

The PRESIDENT: The bye-law says that "copies of the record sheets are to be supplied to the principals of each school." Do you suggest, Professor Dewar, that bye-law 82 is not carried out?

Professor DEWAR: Certainly, I not only suggest it, I assert it as a fact.

The PRESIDENT: Would it not be sufficient that you simply get the Council to pass this resolution, "That the Secretary's attention be called to bye-law 82."

Professor DEWAR: That will do.

The PRESIDENT seconded the motion, which was agreed to.

The PRESIDENT: The next resolution is, "That the Secretary be instructed to intimate the result of the practical examination and to give out the diplomas as soon as the examination is finished, and if it be impossible to give out the diplomas on the same night, to give them out the next morning."

Mr. MULVEY: There is a distinct bye-law which states that the awards shall not be made known until 24 hours after the examinations have concluded.

Professor PENBERTHY: There was.

Mr. MULVEY: Then the bye-law has been deleted by mistake.

Professor MCCALL: I can assure you that in Glasgow diplomas are given to the students the very night they have passed.

Mr. MULVEY: It has been done contrary to the bye-law.

The PRESIDENT: If this is carried, each student may claim to have his diploma given to him the moment he has passed his examination. It does not mean after the whole of the examinations are over.

Professor MCCALL: I beg to second the proposition.

Professor EDGAR: I propose that the procedure of past years be adhered to.

Professor PENBERTHY: There is a bye-law of the College which says that after the examination is over the result should be immediately made known. There would be a difficulty about the diplomas. If in Scotland fifty men were going to have diplomas they could not be ready the same night or even the next day. As to the result being made known, I do not think anybody wishes to object to that.

Mr. DOLLAR: If Professor Dewar would so far meet the exigencies of the case as to consent to insert "twenty-four hours late" in his motion, I think that no great harm would arise, and the effect he desires would be produced without injustice to anyone.

Professor DEWAR: My proposal is simply that if the Secretary found it impossible or impracticable to give out the diplomas the same night he should give them out next morning.

Mr. HARTLEY: I think that if your original proposition became law the student, if he were a cute man of business, might demand his diploma instantly. That would be the spirit of the thing.

Mr. HUNTING: I suggest for Professor Dewar's acceptance, or as an amendment "That the Secretary be desired to present the diplomas to

successful candidates with as little delay as possible after the termination of the examinations."

The PRESIDENT: I was going to suggest this for your consideration—"That the Secretary be instructed to intimate the results of the practical examination to the principals of the schools within twenty-four hours after the examiners have handed in their report."

Mr. HUNTING: I do not like any fixed definite time—there might be circumstances that would prevent it.

Mr. MASON: There is no doubt that the names of the gentlemen who pass are given out at once, as far as practicable, but to hand over the diplomas to them and get the signatures of members is a different thing.

The PRESIDENT: My proposition should read, "That the Secretary be instructed to intimate the results of the practical examination to the principals of schools within twenty-four hours after the examiners have handed in their report."

Mr. MULVEY: I will support that.

Mr. HARTLEY: May I ask what is the practice in the medical profession?

The PRESIDENT: They have to wait weeks and months.

Professor DEWAR: I will accept the President's suggestion.

Mr. HUNTING'S proposition, "That the Secretary be desired to present diplomas to the successful candidates with as little delay as possible after the termination of the examination," which was seconded by Mr. Bower, was put and agreed to, 8 votes for and 5 against.

The Council then adjourned.

Special Meeting.

At the conclusion of the foregoing meeting a special meeting of Council was held, Mr. Jas. F. Simpson, President, in the chair. Present: Professors Dewar, Edgar, McCall, Penberthy, Shave, Messrs. Bower, Dollar, Hartley, Mason, Mulvey, Trigger, Wragg, and A. W. Hill (Secretary).

The PRESIDENT: Our first business is to confirm the minutes of a special meeting held on May 10th. For some reason or other, although a meeting was held for the confirmation of a resolution which was passed at a previous Council meeting on May 10th, according to the Charter, the minutes were never confirmed.

Professor PENBERTHY: What was the resolution?

The PRESIDENT: The resolution was, "That advertising by veterinary surgeons in the public press, or distributing circulars, books, or cards relating to their professional attainments or abilities, or charges, or in respect to medicines or appliances prepared or sold by them, amounts to conduct disgraceful in a professional respect within the meaning of Section 6, Veterinary Surgeon's Act, 1881." This was an alteration of a bye-law, and it was sealed and signed by their President, but the minutes were not confirmed in the minute book.

Mr. FRASER: I move that they be now confirmed.

Mr. MASON seconded the motion, which was agreed to.

Motion by Mr. T. D. Lambert.

Mr. MULVEY: In the absence of Mr. Lambert, and on his behalf I beg to move "That the words 'four guineas' be substituted for 'five guineas,' and that the paragraph shall read as follows: "2. An examination fee of four guineas shall be paid for each examination."

Mr. HARTLEY seconded the motion, which was agreed to.

The PRESIDENT: I am afraid this will necessitate having a special meeting to confirm this. It must be within 14 days, and four clear days' notice must be given to every member of the Council.

On the motion of Professor PENBERTHY, seconded by Mr. WRAGG, a hearty vote of thanks was accorded to the President for his conduct in the chair.

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

A MEETING of the Scottish Metropolitan Veterinary Medical Society was held in the Clarendon Hotel, 104, Princes Street, Edinburgh, on Wednesday afternoon, 27th November, the President (Mr. John Cameron, Berwick-on-Tweed) in the chair.

The President's Hospitality.

Arising from business mentioned in the minutes,

Principal WILLIAMS, on behalf of the Society, returned thanks to the President for his magnificent hospitality on the occasion of the summer meeting at Berwick-on-Tweed. He was only sorry that so few members had been able to avail themselves of that hospitality.

Tuberculosis in Cattle.

The HON. SECRETARY (Mr. Peter Moir) read a communication from the Royal College of Veterinary Surgeons, dated 25th November, stating that a letter had been sent to the Board of Agriculture recommending for the consideration of the President of the Board that bovine tuberculosis should be scheduled under the Diseases of Animals Act for the purposes of notification, isolation of suspected animals, and the slaughter of all clinically diseased animals ; and that means be taken for the veterinary inspection of dairy cows, with a view to guard against the transmission of tuberculosis to man. The Secretary added that at the meeting of the Council of the College an attempt to burke the petition which the Society had sent up for transmission to the President of the Board of Agriculture had been made by a member of the Council who held an exalted position in the profession, and to whom this Society was not unknown. Fortunately, wiser councils had prevailed, and the action which had been taken would be satisfactory to the Society.

The PRESIDENT also referred with satisfaction to this matter, and said they felt deeply indebted to the Secretary for the able manner in which he had drawn up the petition.

British Institute of Preventive Medicine.

The SECRETARY also read a letter from the Royal College of Veterinary Surgeons, referring to the subscriptions asked for the British Institute of Preventive Medicine. He was sorry that the state of their funds precluded them from giving subscriptions to this or any other object. Of course, it was left to members of the profession to subscribe on their own account.

Principal WILLIAMS said they did quite enough for preventive medicine in this country without any fee or reward, and he entirely objected to any subscription of this kind, even supposing they had the money to afford it.

Lincolnshire Veterinary Medical Society.

The SECRETARY next read a letter from the Lincolnshire Veterinary Society, stating that the representations of the Scottish Metropolitan Society on the subject of tuberculosis had been considered, and it was generally felt that in the unsatisfactory relations of the profession and the Board of Agriculture, it would be advisable to defer action in the matter until the claims of veterinary surgeons received better recognition.

The SECRETARY also read a letter from the same Society on the question of grunting in horses. The Society stated that they were of opinion that the sound known as grunting was a decided cause of unsoundness, and was a sufficient reason for the rejection of any animal so affected when submitted to veterinary examination. A concensus of opinion on the subject was much desired, as it would obviate the annoyance to practitioners resulting from the present state of affairs, and no less the loss of dignity

to the profession which was entailed by the opposite opinions of its members.

It was agreed to defer consideration of this subject till another meeting.

Election of Office Bearers.

The President and Secretary were unanimously re-elected to their offices Mr. Rutherford remarking that they would be making a grevious mistake if they made any mistake in the Secretaryship.

The Vice-Presidents were also re-elected.

On the motion of the Secretary, Mr. Robert Milne, Ladykirk, was admitted a member of the Society.

Dishorning of Cattle.

The PRESIDENT read a paper on "The Dishorning of Cattle." This was a subject, he said, which, on account of the recent Dundee dishorning case, affected the whole profession in various important aspects; such as their professional character, humane reputation, and their pecuniary interests. That doctors differed all were agreed. and they could reasonably claim the same privilege, especially in certain cases. But there were other occasions when differences were a dishonour not only to the individual concerned, but through them the whole profession suffered in public estimation. There were some differences of opinion which might be sharp and vibrate a good deal in the profession, especially locally, but the Dundee dishorning case brought their profession into even greater prominence than the Haddington case. He had read the case in detail in some of the public papers. Farmers had spoken to him about it, and he found they were unanimous in their opinions. They felt that justice had miscarried, and that humane feelings and actions had not been supported as they ought to have been. He was of opinion that the decision in this case was not representative of the profession in various aspects; including what was equivalent to a public declaration that any person was capable of and should be allowed to perform this operation. When the whole of the performance was properly conducted, it was short, if sharp, and was productive of beneficial results, and, therefore, was quite proper. But he held that it should be directed and performed by a veterinary surgeon, and that every effort should be made to cause the animal as little pain or mental annoyance as possible. How much rough usage cattle received when being caught, compared with what might be the case if good methods and skill were used. The proper securing of the animal was very important in enabling the operator to perform correctly and quickly. Practice made perfection, and he thought a good veterinary surgeon would be likely to accomplish the accessory and actual performance of the operation in the most expeditious, scientific, and humane manner. He would also be particular in regard to the most approved method, the best kind of instruments, and would keep the same in a clean, antiseptic condition. Supposing, for argument's sake, that the remarks of the Judge in the Dundee case, were sound sense and reasoning, was it not a logical sequence that there ought to be veterinary knowledge before, in order to determine those able or unable to stand the operation, and also to supervise their after-treatment. For these reasons and in conformity with the laws of surgery and dentistry, he thought the operation should be confided to the veterinary profession alone. When the horns were removed the animal was not only powerless to inflict dangerous injuries to its fellows, but the desire to romp and fight was absent. It now took life easy, which naturally favoured feeding. A greater number could be accommodated in the same spaces. He maintained that nature always compensated for any defect, and did so in this case by increased development of the muscles of the head and neck, especially if the operation was performed when the animal was young. This increased the amount of flesh on the animal, and meant increased value to the owner.

He remembered a case some years ago where a cow was so gored by another that she had to be killed, as she was nearly dead. A few days ago he was called to a case where a nice young foal had been very severely gored by a cow two or three days previously. She died next morning. A few years ago he castrated two nice year-old colts. On recovery they were turned into a field where there were some half-bred Highland steers. In a few days one of them was found severely gored in the near breast and terribly swollen; it had been about two days before then (June 13th). The swelling was decidedly erysipelatous, and the constitutional symptoms were also severe. The swelling was overcome, and the wound was all but healed up. It fed and moved better, but the pulse, &c., did not improve with the outward appearances, and on the 28th severe trembling, &c., took place, and he died on the 29th. He had expected that the horn was stopped by the sternum, but *post-mortem* examination revealed the fact that it struck the sternum at the junction of the 4th rib, passing through between the 3rd and 4th ribs, across the floor of the chest, ending with a deep indentation between the corresponding ribs on the off side. The floor of the chest contained a quantity of bloody *débris*. A few weeks ago he attended a cow very seriously gored in the udder; she lost a good deal of blood, and it spoiled one quarter of her udder. These were some of the more important cases he remembered. Many more might be cited by everyone in justification of the operation.

The SECRETARY read a letter from Mr. Andrew Hutcheson, Beechwood, Perth, stating that dishorning was absolutely necessary in the case of cattle fed in open courts, but that a veterinary surgeon should always be present when the operation was performed.

Principal WILLIAMS, as one of the witnesses cited but not examined in the Dundee case, said that from the reports in the newspapers, it appeared that the operation had been barbarously performed, but such was not the case. He had examined the horns, and was of opinion that with one exception the operation had been skilfully and neatly performed, but about a quarter of an inch of the first projection of the frontal bone had been removed along with one of the horns. He had been cited to give evidence for the prosecution, but after hearing the witnesses say that a great proportion of the frontal bone was removed by the operator, it was his opinion that they could not be supported by facts, because, with the exception of this single horn, there was nothing wrong in the operation. He did say, however, and was of the same opinion still, that the after treatment was negligent in the extreme. They were allowed to be fly-blown, and the maggots forming in the open wounds gave rise to extreme irritation and fever, and finally the death of the animal. It was a remarkable thing that injury to the horns gave rise in cattle to very peculiar symptoms. He had seen injuries to the horns give rise to every appearance of heart disease, such as great palpitation of the heart, great nervousness of the animal, loss of appetite, and so on. The pain was excessive, and he had no doubt this was due to the maggots wriggling about. In the Dundee case there was neglect, but there was no other cruelty. The judge said that neglect was not cruelty, and they were not there to dispute his law. He thought the operation should be left in the hands of a skilful man. He had seen it performed, but he had never performed it himself. He trusted he would never be in a position where it would be requisite for him to do so. Still, it was a necessity, and was allowed by the law of Scotland.

Mr. CLARKE, Coupar Angus, stated that he had been a witness both in the Haddington and Dundee dishorning cases. The whole evidence was as to the after treatment of the animals. In the Haddington case he went to North Berwick and found that the operator had done a thing which, in his opinion,

was quite unwarrantable and unnecessary, and which had been done, too, as the operator thought, with the most humane intention. The operator had got a knife and made an incision round the horn which he (Mr. Clarke) considered a most cruel thing, although the operator thought it would be less painful. He was also asked by the defence to go and examine the Dundee animals. He went and made a careful examination, and came to the conclusion that the animals had been successfully operated on with one exception, where the dishorning was slightly deeper than the others. He wished to point out, however, that he considered it an impossible feat in surgery to take any more than the horn from the root. The fact of the matter was that with the saw they could not cut the horn any deeper than the root, which he considered to be the proper place to dishorn the animals. He spoke without any egotism when he said that he had probably more experience of dishorning than any other man in Scotland. He had dishorned with his own hand 25,000 cattle, and he could therefore speak with some degree of authority on the subject. He had come to the conclusion that the best and only plan of dishorning cattle was to do so at the root of the horn, where Mr. Wilson, in the Haddington case and in the Dundee case, had done it. Dishorning should be in the hands of qualified veterinary surgeons, and a great deal depended upon the time of the year. He held that there should be a close time for dishorning, from the first or second week of May till the middle of October, and anyone should be punished who did it at any other time of the year. In Mr. Swan's case the weather took a very unfavourable turn. It was excessively hot during the day, and at night it was almost arctic. The formation of the maggots during the day, and the extreme cold at night, were the means of killing the animals. The practice of dishorning was looked upon by city men as being cruel, but he looked at it from a humane point of view, and he could give scores of cases where legs had been broken and animals had been killed by goring each other. He thought the Society for the Prevention of Cruelty to Animals should rather apprehend those who did not dishorn their cattle. It was very cruel to put a lot of horned cattle together, particularly heifers. Mr. Hutchinson had told him just the other day that he was under the necessity of sending for his veterinary surgeon in order to open abscesses caused by animals goring one another. With regard to the question of bleeding, he said he never tried to stop bleeding, as he thought this was totally unnecessary. The more healthy an animal was, and the freer the blood flowed about, the quicker it would recover. In dishorning cattle no treatment was absolutely necessary. He had dishorned cattle for twenty-five years, and, with one or two exceptions, he had never required to treat them at all. In dishorning, they ought to saw as close to the head as they could, even though they run the risk of taking a bit of the frontal bone. It was the worst possible plan to leave two or three inches, for common sense showed that it was only a receptacle for the holding and retention of pus which would burrow down into the frontal bone, and give very bad results.

Replying to a question by the Secretary, Mr. CLARKE said that in his 25 years experience, he had had only two cases which terminated fatally. In both cases the animals escaped out of an open court, and were exposed during the night to extreme frost, just as had happened in the Dundee case. Replying to the President, Mr. Clarke said he had only dishorned with the shears about fifty cases. He held it was absolute cruelty to dishorn close to the head with shears, because they could not do it without crushing the bone.

The subject then dropped.

Notification of Diseases.

Mr. RUTHERFORD, Edinburgh, introduced the subject of the compulsory

notification of contagious diseases to the Government. The profession had, by a majority, decided in favour of compulsory notification, but it was very questionable if that was the view of the whole profession. He was opposed to it because of the shabby fashion in which the Board of Agriculture proposed to treat the veterinary profession by remunerating them with half-a-crown for each notification. It would be time enough for them to agree to notify disease when the Government gave their profession satisfactory treatment and a free hand in dealing with disease. It was questionable whether the voice of the whole profession had been heard on the subject; certainly not those who had given the matter very careful consideration. It was not the voice of the profession, outside the favoured few, who derived at present large emoluments from the Board of Agriculture. He had returned "No" as his answer, and his reasons were not personal at all. He objected to become a policeman for half-a-crown a time, and he had no guarantee that if he informed the authorities that he had a case of contagious disease, that case would be left in his own management, and that his claim on his client's custom would not be "jumped to somebody else," to use a Colonial expression. It would be time enough for them to agree to notify disease when they were satisfied with the treatment of their profession by the Government. He would decidedly oppose any notification of disease unless they had in black and white, in the strongest possible terms, a most liberal interpretation of the Act, as to how veterinary surgeons would be left to deal with disease. He did not for a moment think it was the wish of the stock-owners of this country to hide disease from the Government; in fact they would be standing in their own light if they did so. Most of his clients would be anxious to notify that they had disease, if they were satisfied that they would be honestly dealt with by the Government. They wanted first of all to have the programme and promises of the Government in the event of contagious diseases being scheduled, and to know what were their intentions to the stock-owners and the veterinary surgeons. For his part he decidedly objected to destroy the confidence that existed between himself and his clients for the paltry purpose of serving the Government for half-a-crown a time or for any other sum.

Professor W. O. WILLIAMS said the Council of the Royal College had considered the matter, and had decided that they would not allow the Government to enforce compulsory notification until certain regulations had been made, one of which was that they should notify to a qualified veterinary surgeon not in practice in their own districts, so that the Government would require to have qualified district veterinary medical officers of health. These district veterinary medical officers of health would receive a notification that there was an outbreak of disease, and they would act upon it, but they would not have the power to interfere with the practice of the veterinary surgeon in whose practice the case happened.

The SECRETARY thought that notification would be a powerful factor towards suppressing infectious diseases, but the whole scheme to his mind bristled with difficulties. In discussing this subject they had the advantage of knowing what transpired in the previous week in the Council of the Royal College. There the President announced that the Secretary had sent out 2 758 circulars to the members of the profession, asking their opinion as to notification—whether they approved of it or not. To this circular only some 700 responded, so that about 2,000 took no notice of it whatever. They were bound to believe that a very large proportion of these 2,000 by acting in this way gave a silent demonstration of their disgust and disapproval not of the scheme, but of the source from which it emanated. Of the 700 who replied, about 500 said they were in favour, and about 200 said they were against it. Of the 500 who approved, a large proportion did so with certain stipulations.

In addition to this, they learned that a committee of the Council had resolved to petition the Board of Agriculture that the veterinary department should be strengthened. What had this animal department of the Board of Agriculture been doing of late? They had been strengthening the lay element, by appointing additional travelling inspectors who were not veterinary surgeons. He noticed in the *Veterinary Record* that some fifty lay veterinary inspectors had been lately gazetted. He had seen some of the names of these gentlemen, and he must say that many of them were very high-sounding names. His impression was that Major Tennant of the Animal Department of the Board of Agriculture ruled the roast, and that the savoury drippings of this roast were bestowed in the shape of good appointments to the impecunious friends of a circle of society higher than their own. What examination had those gentlemen passed? What were their qualifications? The veterinary profession was overcrowded, which was the result, to a great extent, of the good work they had done in suppressing disease. They had reduced the amount of disease, but at the same time they had reduced the amount of their practice and their pecuniary returns generally. There were many men in the profession who would subject themselves to any examination, if they were asked, in order to denote their fitness to inspect at the seats of outbreaks of infectious diseases, and to advise preventive measures. Many men in the profession would be glad of these appointments. He thought it was a gross abuse of power that the veterinary profession should be treated in this way, after the good it had done for the country. It was for the Royal College and the profession at large to make the best terms they could with the Board of Agriculture. He had returned his circular with the answer "Yes." He was in favour of notification, but he only wished it to be put in practice when the Animals' Department of the Board of Agriculture ceased to insult and injure the profession.

The PRESIDENT read the answer which he had sent to the circular of the Royal College. He was in favour of compulsory notification as suggested by the Board of Agriculture, provided that it was accompanied by the other concomitant methods of procedure which everywhere prevailed in connection with the medical profession. Otherwise he said "No." If the Board of Agriculture meant them to simply notify all such diseases, and have nothing else to say or do with it, as obtained in most countries at the present time—the Board of Agriculture's amateurs and the police having all other procedure in their hands—then most decidedly he said "No." Why should they be treated so badly and differently from the medical profession? Every parish, or two or three parishes combined, had its medical officer of health, with a chief one over the whole county. Such had also been the mode of veterinary management for years in Aberdeenshire. He asked them to compare the excellent results which were obtained there with those bad results in some North of England counties a few years ago. In some other counties the members of their profession had for years fully reported all cases, although they had been denied the district official position which they were entitled to, and had received neither thanks nor reward. Compel every local authority to divide their whole boundary into districts, and appoint the ablest M.R.C.V.S. as district inspector, with a consulting one for the whole county, each to receive some small remuneration. Having done so they could then proceed with compulsory notification, there being only a small unplaced minority who would be affected by it in counties. As for large towns and cities, he was sure many of the unplaced members would be very glad if they were compelled by law to report all such diseases. It would relieve them from the very unpleasant position in which they occasionally found themselves. He hoped the Council would speak out in favour of more just treatment to the profession without regard to fear or favour.

Mr. RUTHERFORD repeated that they would destroy all confidence between themselves and their clients if they were to act the part of policemen in this matter.

Principal WILLIAMS said notification was quite unnecessary, for, with the exception of swine fever, they had no disease at present in Scotland; and why should all that noise be made about notification now? Until tuberculosis was included in the Act they would have nothing to do, and he did not think any of them would make half-a-crown a year by notifying outbreaks of disease under the Act.

Professor W. O. WILLIAMS moved that they represent to the Royal College that they did not desire notification unless to qualified veterinary surgeons out of practice, who should be the inspectors.

The SECRETARY seconded the motion.

Mr. RUTHERFORD moved, as an amendment, that they do not approve of compulsory notification, and this was carried by a majority.

The Tuberculin Test.

Mr. BOYD, Melrose, made the following short statement regarding the tuberculin test: The Government of this country is grudgingly slow to give a helping hand to the veterinary profession. Even when the profession brings before the country any scientific discovery, such as the tuberculin test, likely to be a universal benefit, the Government is slow to take it up. Considering the great prevalence of tuberculosis and the great certainty of the tuberculin test, I consider it the duty of every veterinary surgeon to bring forward statistics regarding the tuberculin test, and impress the Government with the necessity of taking it up. I wish to bring before the meeting what I have done in testing with tuberculin, and show how many cases of tuberculosis we find in one district. Altogether I have inoculated 76 different cattle, a good many of which I had reason for suspecting had tuberculosis. Out of the 76 inoculated, 30 failed to stand the test. Of the 30 that failed to stand the test, I made 20 *post-mortems*, and each *post-mortem* proved the tuberculin test to be correct. I determined to try tuberculin as a curative agent the first chance I got. I got the consent of a stock-owner to try an eight-months-old heifer. This heifer was in poor condition, much enlarged in the parotid glands, and made a loud noise in respiration. I have inoculated the heifer 6 times, and the following are the temperatures before and after each inoculation:—

Temperature	before first inoculation	102
,,	*after* ,, ,,	106
,,	before second ,,	$101\frac{4}{5}$
,,	*after* ,, ,,	106
,,	before third ,,	$101\frac{3}{5}$
,,	*after* ,, ,,	$105\frac{2}{5}$
,,	before fourth ,,	$101\frac{2}{5}$
,,	*after* ,, ,,	105
,,	before fifth ,,	102
,,	*after* ,, ,,	104
,,	before sixth ,,	102
,,	*after* ,, ,,	$103\frac{1}{5}$

This heifer is now much improved in condition, the enlargements in the

parotid region are much less, and the noise in respiration has greatly diminished. I am still continuing the inoculation to see what the result will be.

After some observations from Mr. McConochie, Ayton and Mr. Aitken, Dalkeith,

Principal Williams said that, from his personal experience, and from his reading, he was prepared to say that if there was an elevation of temperature after the tuberculin inoculation, that showed tuberculosis somewhere. It might even be in the marrow of the bone. In trivial cases the tuberculin action was very pronounced, whereas in others, where the tuberculin was diffused, the elevation of temperature was very small in comparison.

Professor W. O. Williams instanced the case of a cow which, on being cut up by the butcher, who intended to send the marrow-bones to the clubs, was found to contain a cheesy material in the bones. These bones were sent to the College, and this matter was discovered to be typical tuberculosis in the bone, although the cow otherwise was perfectly healthy.

Professor W. O. Williams afterwards exhibited his tracheotome and a set of Huish's instruments in case. The President also exhibited a pole for holding cattle while being dishorned.

A Long-lived Horse with Calculus.

Mr. Rutherford brought under the notice of the meeting the case of a horse suffering from calculus, which had lived longest of any horse in his experience suffering from that disease. The time he lived while under treatment was exactly 31 days, and he fancied this was almost a record case. It was a horse about six or seven years old. He had been sold by a client of his, and was on trial. He was attacked with colic, and on the second day, as the horse was no better, his client desired him to go and see it, and if the horse was fit for removal, to remove him to his own premises for treatment. The other veterinary surgeon who was in consultation agreed with him that the horse was quite fit, and he was accordingly removed to his client's premises. When he first saw the horse there was nothing to distinguish him from an ordinary case of stoppage of the bowels, and the horse had received up to that time what he considered to be proper treatment. The only thing he recommended was hot blankets, and he was treated as suffering from colic. That day, he thought, he had two subcutaneous injections of morphia, and on the following day there was still fugitive colic. The day after he was obliged to leave for Birmingham, and being desirous to see passage of the bowels, he administered esserine sulph. The day passed, but this had no effect. There was no passage, and when he returned from Birmingham, three days afterwards, there was still no passage, but the horse was fairly comfortable. There was no swelling; colic was there occasionally, just a scrape or two. He had no appetite; he showed a tendency to stand backwards, and he had an abominable, foul, fœtid breath. The indications were that it was more likely a case of what one would call the suspension of the function of the bowels—a condition approaching almost to paralysis of the bowels than anything else. His diet was put in the form of oatmeal and linseed gruel. Everything was done with the view of restoring the functions of the bowels. He was exercised, and it was noticed that the exercise invariably produced an excess of abdominal pain. Finally, they had to abandon the exercise. The case went on like this till the 20th day. So far as external appearances was concerned, there seemed to be nothing the matter with the horse. About the 20th day he began to eat a little, and was fairly well. The pain was very seldom present. On the 20th day there was an excess of pain and change of the bowels. He began to fear the worst, and determined to rouse the bowels into some kind of action. An injection was administered, and

this produced a violent colic, and in a short time he had a passage from his bowels. The passage continued for six or seven days, and then the stoppage returned, and death took place eleven days after that. After he got passage the first time the attack came on, he was pretty confident that this was a case of calculus. He never could feel the calculus nor locate it at all. If ever there was a favourable case for operating upon this was one. He told his client, and as he was satisfied it was bound to die, he did not wish his animal to be butchered, and preferred it to die painlessly. It would have required an excision of 18 inches to get the calculus out, and he could not recommend an operation under these circumstances, especially as the animal was in an ordinary loose box, and there were no surgical appliances at hand. This animal never received anything in the way of purgatories, and it was to that he attributed the fact of its living so long.

Principal WILLIAMS said he had seen two or three cases where horses had lived 19 to 21 days, but never one that had lived for 31 days. He attributed it entirely to the absence of purgatories. When purgatories were administered the horse usually died three or four days afterwards. They should not perform an operation unless they were satisfied that the calculus was there.

Votes of thanks to the speakers and the Chairman brought the meeting to a close.

ADDRESS TO THE STUDENTS OF THE GLASGOW VET. COLLEGE.

BY PROFESSOR MCKENDRICK.

(*Continued from page* 366.)

IN the second year you will also receive practical instruction in stable management, and the manipulation of domesticated animals, and the principles of shoeing. No doubt some of you will be already familiar to some extent with the management of animals. Nothing is more striking than the ease with which some men can control animals contrasted with the clumsy efforts of others. Probably much depends on the innate qualities of the man—kindliness, courage, firmness, promptitude—but these qualities can be developed and improved by practice, and you will have explained to you the general principles on which you must proceed. In this department of your work, and, indeed, throughout your lives, you will learn to treat animals with kindness and consideration. Nothing can be gained by brutality and coarseness, and the animal will respond, as a man does, to a union of gentleness with firmness.

Your third year introduces you to the phenomena of disease and to practical therapeutics. In the first place, you will study morbid anatomy, pathology, and bacteriology, not merely from books, but with the diseased specimens before you, and with the aid of the microscope, and the improved methods of observation now in vogue. It is much to the credit of veterinary medicine that she soon recognised the value of the study of bacteriology. The domestic animals, like ourselves, are preyed upon by organisms of a lowly nature, and yet potent in their effects. Bacteriology is the department that studies the life history of these organisms, their mode of multiplication, the conditions that favour their multiplication, the effects they produce in the living body, and the conditions in Nature that favour their destruction. A vast amount of information has been gathered in recent years as to the natural history of these organisms, and the last development in this chapter in science is the isolation and identification of the specific substances produced by these organisms (known as ptomaines)—substances which produce powerful effects on the living body. Bacteriology takes us nearer to the origin of many diseases. The older pathologists cultivated with great success a division of the subject known as pathological anatomy. They described and preserved the diseased specimen; they were well acquainted with the naked eye appear-

ances after the disease had done its worst; but they made little progress in tracing the first steps of the disease. The study of micro-organisms as a cause of certain maladies has undoubtedly led us nearer to the earlier pathological conditions, and by this route we may hope to reach the genesis of cancer, of tubercle, and possibly also of many tumours and inflammatory conditions of certain organs. I do not by any means assert that the germ theory of disease is the last word in pathology, or that it is the key by which all pathological problems will be solved, but it has added enormously to our knowledge of the natural history of many diseases, and it has been a beacon light guiding the course of preventive medicine. For these reasons you should take every opportunity of acquiring a good practical knowledge of the subject.

Along with the study of pathology in your third year, you will have brought under your notice *materia medica*, or the natural history of the substances used as remedies: pharmacy, or the technical art by which these substances are converted into medicines; therapeutics, or that branch of medical science which teaches the general principles that guide us in the selection of drugs for special morbid states; and toxicology, or the natural history of poisons. Another course of great importance is that treating of veterinary hygiene and dietetics. Hygiene deals with all the questions of physical well-being, such as good water, pure air, and food sufficient in quantity and adapted in quality to the work the animal has to perform. It also treats of the proper housing of animals, the special treatment of the horse so as to secure the best physical development of the animal, the care of cows in the dairy during gestation, &c. You will observe that this is all in the direction of the prevention of disease, while it aims at the highest state of efficiency of the animal.

Finally, you come to the fourth year, when your attention will be wholly directed to the study of veterinary surgery and medicine. This is the time when you will bring to focus all the knowledge you have previously acquired, and you will be successful in this department, the main work of your lives, just in proportion to the thoroughness with which you have mastered the earlier studies. If you will allow me to quote my own experience, I would advise you to take every opportunity of acquiring clinical knowledge. Study thoroughly each case of disease brought before you, follow your teacher in the detection of each physical sign of the disease, make notes of all your cases, indexing and classifying these for future reference. Thus you will, day by day, find your experience accumulating, and when you step into actual practice you will have a store of available knowledge of greater value than you can ever acquire from books.

Examinations.

I have now given a sketch of the curriculum through which you will pass, and you will admit that it is broad and comprehensive. If we were all in earnest about our work, and if we conscientiously took every opportunity of acquiring sound knowledge, attendance on such a course of instruction as I have delineated ought to qualify a man to practise. Unfortunately, however, we must take human nature as it is, and as many men are not inclined to work nor to take the advantages of education offered to them, the public must have some guarantee that men are fit to practice before they commit valuable animals to their charge. This guarantee is obtained by the examinations of the Royal College of Veterinary Surgeons. Examinations are by no means the only test of a man's fitness, but they are the best available test, and until we can devise a substitute the inevitable examinations must be faced. I fear that my views on examinations will not meet with general approval. At all events, I recognise the fact that they are not in harmony with the opinions of many of those who direct our affairs in these matters. Let me, in the first place, say,

however, that, so far as the examinations of the Royal College of Veterinary Surgeons are concerned, I believe they are reasonable and well arranged. The examination in each subject is both written and oral. Written examinations have only recently been introduced. The candidate is allowed two hours to write a paper on each subject, except veterinary medicine and veterinary surgery; for each paper on the latter three hours are allowed. My opinion is that the introduction of written papers has been of considerable advantage to the candidate, by giving him a certain measure of confidence before he appears for the oral examination. Apart also from their value as an immediate test, I think they serve a useful purpose in guiding the student during his curriculum. One should often practise the art of written composition. The exercise leads to precision of thought and to a clearer perception of things. Our modes of speech are often very inaccurate, and oral statements will seldom bear inspection when they are put on paper. I would therefore strongly advise frequent written exercises in all classes, were it for no other reason than that the practice cultivates style. The style of a written composition counts for much when one has to submit a paper to a body of educated men. Suppose, for example, that you are asked, as you probably will be, to give a report on a valuable animal, or on a question relating to the hygienic arrangements of a dairy farm, the mode of your report will show at once whether or not you are an educated man, and it will make an impression for or against you.

After the written paper you will have an oral examination, occupying from twenty minutes to an hour. This no doubt is the testing examination, and it should count for more than the written paper. As far as possible it should be of a practical character, and for this purpose I think the examination should be held in the place where the subject is taught. The examination in chemistry should be in the chemical laboratory, and the examination in anatomy in the dissecting room. We will by-and-by get rid of the antiquated plan of all the examiners sitting in one room. This is a convenient method for the examiners, but not for the candidate, who must be often disturbed by the sounds in his vicinity. After an ordeal of one or two "tables," a man is almost certain to be in a disturbed state when he appears at the second or third, and he may be stunned by a question on a fresh subject being hurled at him almost as soon as he has taken his seat. I have often noticed desperate efforts at self-control in these circumstances. All this might be avoided. The candidate should have every opportunity of showing what he knows, and he should never be handicapped by unfavourable conditions. In the quietness of a laboratory, or in a dissecting room, with all kinds of specimens lying about, the candidate and the examiners should have a peripatetic conversation, during which the former will have nothing to distract his attention from the subject in hand. I feel sure also that this plan would be much less fatiguing to the examiners.

The point on which I must give expression to views that will be deemed heterodox is with regard to teachers taking some part in the examinations. My training and position in a Scottish university no doubt leads me to favour the practice of teachers acting as co-examiners, but as I quite recognsie the difficulties in the way of the Royal College of Veterinary Surgeons following this course, this expression of my views may be regarded only in the light of a pious opinion. My fundamental principle is that teaching should always be something above and ahead of examining. The examiner should never control the teacher. The teacher should be the best man available for the post he fills, and he should teach his subject to a great extent irrespective of the claims of examiners. His teaching should be conjoined with class examinations forming part of the class work. The work done by a man in the class should form part of the test examination. If this were recognised

it would stimulate a student to diligence during the time he attended the class, and it would, to a large extent, do away with the customary cramming before an examination. The method of having the examinations entirely conducted by examiners who are not teachers, sets up a standard of knowledge to which the teachers must conform, and there is always a risk of examiners being appointed who are not conversant with the subject as viewed from the latest standpoint. The remedy I would suggest is for the Royal College of Veterinary Surgeons to declare that the fact of being a teacher in any of the veterinary schools of the country shall not disqualify a man from acting as an examiner in the subject in which he teaches. Further, that as there are two examiners in each subject, one of these should always be an expert chosen from the ranks of the veterinary profession, or from the medical profession, while the other should be, for a term say of three years, one of the teachers of the subject in one of the veterinary schools. It would not be difficult to arrange that the professoral examinerships should go to the four veterinary schools in rotation. Such an arrangement would have an important effect on the status of the teacher, and I feel sure it would help to keep up that intimate connection between the subject as taught and the subject as examined upon that ought to exist. There should not be two, but only one standard of excellence. If, along with this, some scheme could be devised by which class work could be taken into account, the evils of the examination system, which almost everyone recognises, would be to some extent overcome, and the test applied to candidates would be more trustworthy than it can be under the present system.

The Veterinary Profession and Preventive Medicine.

It is one of the characteristic features of the veterinary profession that it has done so much in the way of preventive medicine. This, no doubt, arises largely from the nature of the case. Measures can be adopted to prevent or suppress diseases that cannot be applied to human beings. Anyone studying this aspect of the subject is struck in the first place with the enormous numbers of the animals usually classed as domestic, and which form no inconsiderable part of our national wealth. Thus the preliminary statement compiled from the Agricultural Returns of Great Britain (not including Ireland), collected on the 4th of June, 1895, show the following figures :—

Cows and heifers in milk or in calf	2,485,820
Other cattle, 2 years and above	1,431,525
,, 1 year and under 2	1,190,368
,, under 1 year	1,246,623
Total of cattle	6,354,336
Ewes kept for breeding	9,663,129
Other sheep, 1 year and above	6,334,386
,, under 1 year	9,794,680
Total of sheep	25,792,195
Sows kept for breeding	415,210
Other pigs	2,469,221
Total of pigs	2,884,431

The number of horses in 1894 is given at 1,529,641* in Great Britain, and

* The Statesman's Year-Book, 1895, p. 67.

468,089 in Ireland. In 1894, in Ireland we find of cattle 4,392,194, of sheep 4,105,250, and of pigs 1,389,310. These figures must be added to the figures of the table given above to show approximately the number of live stock in the British Isles.

The Agricultural Returns for the Board of Agriculture for 1894 give the following very interesting statistics for 1893 as to the live stock of certain of the chief countries of the world :—

	Horses.	Cattle.	Sheep.	Pigs.
United Kingdom ..	2,079,587 ..	11,207,554 ..	31,774,824 ..	3,278,030
Australia.. ..	1,870,058 ..	12,637,252 ..	116,159,732 ..	1,027,714
Austria-Hungary ..	†1,548,197 ..	†8,643,936 ..	†3,186,787 ..	†3,549,700
Canada	685,187 ..	2,057,882 ..	1,935,938 ..	1,012,022
Cape of Good Hope	340,323 ..	1,929,800 ..	15,124,753 ..	228,764
France	2,767,648 ..	12,154,641 ..	20,275,716 ..	5,860,592
Germany	‡3,836,256 ..	‡17,555,694 ..	‡13,589,612 ..	‡12,174,288
Russia in Europe	*19,663,336 ..	*24,609,264 ..	*44,465,454 ..	*9,242,997
United States ..	16,081,139 ..	53,095,586 ..	45,048,017 ..	45,206,498

In his report to the President of the Board of Agriculture, Major Craigie makes the following interesting comments (Agricultural Returns for 1894, p. 45) :—

"The stock of cattle in the United States, nevertheless, far exceeds the record of other countries, being more than twice as great as the numbers last shown for Russia in 1888, more than three times greater than the total returned for the German Empire in 1892, and from four to five times greater than either the Australasian, French, or British herds. In sheep the same predominance is not apparent, as the United States, with their population of 66,800,000, do not return more than 45,000,000 sheep, compared with 116,000,000 in our Australasian colonies, with their 4,000,000 inhabitants. There were nearly 32,000,000 sheep to 38,000,000 persons in the United Kingdom in the year in question. In numbers of swine, no other country approaches the United States, there being, even after a reduction of 7,000,000 head compared with 1891, 45,200,000 enumerated against 5,860,000 in France, and 3,278,000 in the United Kingdom in 1893. Germany, with 12,174,000 pigs in 1892, come nearest to the American total. Even this number, however, only represents a little more than 24 pigs to each 100 persons, while the American population, even as now reduced, stands at 67 to each 100. The proportion of pig stock to population, which the agriculturists of the United Kingdom apparently believe it profitable to maintain, does not much exceed one-eighth of this ratio."

These figures will help you to realise the enormous interests committed to the charge of the veterinary profession. It is well known that plagues (most of them of foreign origin) have raged among our flocks and herds from the earliest times. A most interesting history of those epidemics for the period from B.C. 1490 to A.D. 1800, is given by my friend, Dr. George Fleming, in his work on animal plagues, a book I would strongly recommend you to read.§ It is only, however, in comparatively recent years that efforts have been made on a great scale, and by public authorities, to arrest the progress of these plagues. From 1865, when a Royal Commission was appointed to investigate the origin and nature of cattle plague, down to 1892, when an Act (55 and 56 Vict., c. 47, passed 27th June, 1892), was passed to enable the Board of Agriculture to apply the monies provided by Parliament for stamping out pleuro-pneumonia for the purpose of dealing

* 1888. † 1890. ‡ 1892.

§ Animal Plagues: Their History, Nature, and Prevention. By George Fleming, LL.D., &c. London: Chapman and Hall, 1871.

with foot-and-mouth disease, a great deal has been accomplished. An excellent summary of these measures, and of their beneficent results, is given by Professor G. T. Brown in his report (dated March, 1894) to the President of the Board of Agriculture for 1893. Previous to 1865 the Acts in operation relating to diseases of animals were limited in their operation and were comparatively unimportant. The virulence of the cattle plague led to an order of Privy Council directing dairymen and owners of stock to give notice of any outbreak of cattle plague to the Clerk of Council. Mr. Brown states that, "Instead of obeying this order, owners of stock deemed it more to their interest to conceal the disease and send their cattle to the market as quickly as possible, with the natural consequence of the rapid extension of disease from the Islington market." This led to the appointment of inspectors, to the passing of several Acts of Parliament (29 Vict., c. 2; 29 Vict., c. 15; 29 and 30 Vict., c. 110; 30 and 31 Vict., c. 125), and also to the important step of instituting the Veterinary Department. By 1867 cattle plague had been almost stamped out by the application of the system of slaughter, a system, however, that met with strong opposition from many quarters.

Other diseases were common in this country amongst animals. According to Professor Brown, foot-and-mouth disease has existed since 1839, pleuro-pneumonia since 1840; anthrax, sheep scab, swine fever, and rabies from an unknown period. About the time of the cattle plague pleuro-pneumonia was prevalent, and its contagious nature was scarcely recognised. By an Act passed in 1869 (32 and 33 Vict., c. 70), which repealed all previous Acts relating to Animals, extensive powers were given to the Privy Council to deal with the suppression of cattle plague, pleuro-pneumonia, foot-and-mouth disease, sheep pox, sheep scab, and glanders. This Act controlled and regulated the conditions of foreign importation to an extent before unknown, and the Privy Council, guided by the officers of the Veterinary Department, issued numerous orders, and gradually worked out an efficient system which, while it may have caused local inconvenience and affected private interests, has had most beneficent results. Thus, as regards pleuro-pneumonia, and especially since the passing of the pleuro-pneumonia Act (53 and 54 Vict., c. 14, 1st September, 1890) in 1890, year by year the number of outbreaks has diminished. In 1890 the total outbreaks were 193, while they were reduced to nine in 1893. Mr. Brown (Professor Brown's report *op. cit.* p. 11 and p. 12) remarks :—

"It is not possible to assert that pleuro-pneumonia has been entirely extinguished. Even in a small island like Great Britain it is not very difficult for those who desire it to keep the disease concealed, by sending cattle to be slaughtered immediately on any sign of illness appearing, and disposing of the rest of the stock at the most convenient markets. It may, therefore, be expected that outbreaks of disease may be discovered from time to time, but there need be no apprehension of any extensive spreading of the affection with the present machinery for the purpose of detecting and arresting it. . . . At the end of the year 1893 the sanitary condition of the stock of the country, at least in regard to those diseases which come under the provisions of the Contagious Diseases (Animals) Acts, was satisfactory. To summarise the work of the past twenty-eight years, it may be stated that three incursions of cattle plague, and four outbreaks of sheep pox had been effectually suppressed. Pleuro-pneumonia had been so far stamped out as to be looked upon as a thing of the past, and foot-and-mouth had apparently ceased to exist. In fact, swine fever is the only disease remaining, the stamping out of which can be considered a matter of urgency."

The diseases of anthrax and rabies, especially the former, are still too common, but the prospects of their final extinction are hopeful. In 1893 1,300 animals were attacked with anthrax in Great Britain, "almost double

the number of any previous year since statistics has been obtained." When we consider that the blood of an anthrax animal is highly virulent, even to human beings, causing in the latter malignant carbuncle and the peculiar malady known as "wool-sorters' disease," it is no wonder that considerable alarm has been created. The battle, which will no doubt end in the extinction of this malady, was really won when it was found to be due to a small rod-like organism, *bacillus anthrasis*. The life history of this organism is now well known, and, from the practical point of view, two important observations have been made:—(1) That the blood is highly virulent; and (2) that the organism soon dies, probably from deficiency of oxygen, during putrefactive changes. Means are now taken, after the slaughter of the infected animals, to destroy the blood and the carcase, and to thoroughly disinfect everything with which blood may have come into contact.

The splendid results I have briefly laid before you redound to the credit of the veterinary profession. They are quite in keeping with the results of the sanitary efforts of the other branch of the profession dealing with many zymotic diseases. Both unite in teaching us two lessons. The first is that if we would conquer a disease we must study its natural history. Here knowledge guides to efficient action. When we know the cause and the conditions favouring the efficient action of the cause of any disease, then we can deal with it, if not in the way of cure, at all events of prevention. The second lesson is that, in dealing with any prevalent disease, the interests of individuals must always give way to those of the community. Any action involving destruction of property will always meet with opposition from those who own the property, even though they may admit that the proposed action is in the interest of the public. It follows that it is only just to remove this opposition by distributing the loss over the members of the general community. If the stock of a farmer has to be sacrificed in the general interest, it is only reasonable that he should be helped out of local rates, or in any just way our fiscal authorities may determine, to bear the financial loss. It is, however, another matter when we consider the case of men whose interest it is to favour the importation of foreign cattle, and who are always ready to find fault with the stringent regulations of the veterinary department. Here self-interest must not be allowed to interfere with the rights of the owners of our own flocks and herds, who dread the introduction of disease from abroad. No doubt, much wisdom is necessary in dealing with these matters. On the one hand, the dock regulations must be such as thoroughly to prevent the introduction of disease from without, but they must not be such as will afford more than legitimate protection to the owners of our home flocks or herds, nor must they interfere with the food supplies of the masses of the people. As pointed out by the Marquis of Londonderry at the Sedgefield Show in August last (*Live Stock Journal*, 30th August, 1895, p. 241), there is a decrease in the importation of live stock, upon which this country so largely depends, of no fewer than 866,413 beasts during the last seven months. How far this diminution may be due to the effect of stringent regulations, or how far it may be due to some relation between the number of live animals and the food stuffs of the country, it is not in my power to say, but the reduction in the numbers calls for remark.

I shall say little about the large amount of tubercular disease that is said to exist among cattle, and which appears, according to the best authorities, to be communicable to man. Tubercular disease, in all its forms, is undoubtedly excited by the micro-organism known as the tubercle bacillus. A recognition of this fact throws a new light upon the prevalence of tubercular disease in this country. If the organism can be introduced into the body of the human being by the eating of imperfectly cooked meat, or, as some say, by milk, it is of the greatest possible importance to have all meat thoroughly inspected, and,

if contaminated, it should at once be rejected. Here the principles I laid down as to the public bearing a share of the expense, are directly applicable. The man who sells the animal to the butcher may be unaware of the fact that his beast is the subject of tubercular disease, but neither he nor the butcher should have any temptation to dispose of meat that is dangerous human food. No doubt, thorough cooking will diminish the risk, but it would be infinitely safer that the inspection, as presently carried out, should be made as efficient as possible, and that there should be no pecuniary temptation to help in spreading disease. During my time as examiner, I was startled occasionally by the appearance on the table of the pathologists, of diseased meat which had been seized and condemned, and was now submitted to the inspection of the student.

With reference to the prevention of disease, there is one practical matter on which I desire to say a word on this fitting occasion. Not long ago we had a scare of rabies in Partick. Whether it was justifiable or not I shall not inquire, but a dog was killed, and its head sent to my laboratory, where the pathologists proposed to carry out a few experiments with the view of ascertaining whether or not the animal had really died of rabies. This could only be ascertained by injecting into a rabbit fluid (saliva, blood, &c.) taken from the head, and if the dog had died of rabies, characteristic symptoms would soon appear in the rabbit. My laboratory was chosen to be the scene of the investigation, because it is one of the few places in Glasgow licensed under the Vivisection Act, but as I thought it was an unsuitable place for the study of rabies (the danger of contagion being great), I would not consent to the investigation being made in my rooms. I believe the head had to be sent to London or Paris because there was no place in Glasgow where the investigation could be carried out. I think the mere statement of this fact shows that the municipality of a great community like Glasgow should, under the supervision of their able medical officers of health, have a suitable isolated laboratory in a country district near Glasgow where such work could be done. This defect in our public health arrangements also came under my notice in connection with the serum treatment of diphtheria which has recently attracted much attention, and which is, on the whole, so efficient that a medical man meeting with this terrible disease, for which his remedies are so few and ineffectual, would be desirous to give at all events his little patient a chance by the sub-cutaneous injection of the prepared serum of the horse. But it is difficult and costly to get this fluid. It can only be got in small quantity, from Paris or London, and after a delay of hours that may be precious in the race for life, while there is no reason whatever against the remedy being prepared in an institution near Glasgow.

Gentlemen, I now draw this address to a close, after having made great demands on your patience. Let me wish you a prosperous session. Be gentlemen in your conduct, be earnest in study and in the acquisition of knowledge, and take advantage of every opportunity this college affords of enlarging your professional experience. You will thus prepare yourselves for an honourable and useful career in life.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE last quarterly meeting of the above Association was held at the Empress Hotel, Sunderland, on Friday, November 15th. The President, G. M. Mitchell, M.R.C.V.S., was in the chair, and a large number of the members of the Society was assembled. The members present were: G. M. Mitchell, Esq., President, C. Hunting, F.R.C.V.S., South Hetton; C. Stephenson,

F.R.C.V.S., Newcastle; J. E. Peele, F.R.C.V.S., Durham; J. W. T. Moore; F.R.C.V.S., Newcastle; Veterinary-Major Durrant, H. Hunter, Newcastle, David Dudgeon, Sunderland; J. G. Deans, Bishop Auckland; C. S. Hunting, South Hetton; J. Gafton, North Shields; George Elphick, Newcastle; W. Hunter, Newcastle; A. Hunter, Newcastle. Visitors: Professor W. O. Williams, Edinburgh, and P. Moir, Edinburgh.

After the reading of the minutes, the PRESIDENT nominated Mr. G. Craik, Alnwick, for membership; seconded by Mr. STEPHENSON.

A short discussion on "Notification of Infectious Diseases" was opened by Mr. G. ELPHICK, who stated that the returns from the veterinary profession forwarded to the Council regarding this subject had not been satisfactory, being few in number, some burdened with stipulations, but mostly in favour of the adoption of notification of disease. The Council felt disappointed, as it was extremely desirous not to commit the profession in any way on this subject without having further knowledge of its wishes and ideas.

Mr. GOFTON, North Shields, disapproved of the profession taking notice of the request to opinionate on the question of notification until they knew what it meant. Was it to apply to all diseases in the lower animals, or only to those already scheduled? Who was to certify the notification was correct? Was it to be made to a local inspector, or local authority, or to be forwarded direct by the practitioner to the London Board? He could see a considerable amount of good in the proposed scheme, but thought a great amount of friction between a veterinary surgeon and his clients might be avoided were the clients compelled also to notify as well as the veterinary surgeon. Was it to be a law adopted by all local authorities? He would most certainly decline to give his opinion until he knew more of the details of the scheme.

Mr. DUDGEON, senr., was inclined to think that the diseases meant to be notified, were those already scheduled. Glanders and farcy seemed to be the diseases that more particularly called for this Notification Act. He begged to move that—"It is the opinion of this meeting the time has not arrived for compulsory notification, to be made by veterinary surgeons."

Mr. W. HUNTER seconded the motion. He felt constrained to say that he had no faith in the scheme. It would not benefit veterinary surgeons, would cause great dissatisfaction to clients, and as for the pittance offered, he would not accept it. The seeming necessity for notification was simply due to the want of liberality by the Government, in not giving compensation sufficient for cases of glanders and farcy. The disgraceful way the profession has been used also made him very chary of having anything to do with Government schemes.

Mr. HUNTING, senr., moved a direct amendment. He considered this was a question the profession should not take up in a narrow-minded spirit, but in a dignified manner, looking not to their own, but to the interests of the country. He certainly thought that it should be made compulsory for owners to call in the veterinary surgeon before notification was made.

Mr. C. STEPHENSON seconded with great pleasure the amendment.

Mr. H. HUNTER also supported the amendment, and pointed out that the fact of notification being compulsory threw no odium on the practitioner when he did his duty, which their clients would recognise.

Mr. G. ELPHICK strongly advised the meeting to acquiesce in a kindly spirit to a notification scheme. By doing so they might be getting in the thin end of the wedge towards securing some of the inspectorship appointments they all felt so sore about. Most certainly, to act in a contrary spirit was impolitic. The interests of the public, moreover, should be studied. There seemed to him to be difficulties regarding the local inspectorships, and he thought they should be held by men not in active practice, they being less likely to collide with brother practitioners. Regarding the notification of tuberculosis and glanders, they were eminently diseases that could be categoried as

"suspicious" and suspected cases, could be isolated until unmistakeable proof was afforded, as to the existence or otherwise of these diseases.

Mr. H. HUNTER coincided with the views of the speakers to the amendment of the motion, by his friend, Mr. Dudgeon, that they should not approve of a notification Act at this time. Some years ago he was called into a very serious outbreak of glanders, and he now felt that compulsory notification would have very much strengthened his hands. He hoped soon to be placed in a position to announce that compulsory notification was in force.

On the amendment and motion being put to the vote, the amendment was carried by a large majority, and was then put as a substantive motion and carried.

The election of office bearers for the ensuing year was next proceeded with. Mr. A. Chivas, M.R.C.V.S., Corbridge, was unanimously elected as president, Mr. A. J. Dalgleish, Newcastle, as secretary, and as vice-presidents Messrs. C. Stephenson and J. E. Peele, F.R.C.V.S.

Professor W. O. WILLIAMS, New Veterinary College, Edinburgh, next gave the following paper on influenza in horses.

Mr. President and Gentlemen,—I have to thank you for the honour you have done me in asking me to read a short paper to you on that seemingly ever-present disease, influenza.

It would be as well in commencing, to make ourselves certain what influenza really is. In my opinion the name is used in much too lax a manner, and is made to cover all forms of illness which are characterised by sudden and great prostration, and perhaps by respiratory complication.

To my understanding, influenza is a generic term applied to one or other of several specific contagious and infectious diseases. To begin with we have: pink-eye, acute catarrh, pneumonia, pleuro-pneumonia, acute enteritis, and lastly a typhoid form of seeming general debility. It will hardly be necessary for me to tell you the symptoms as usually seen when anyone of us is called in to see a case, but I might perhaps mention my own experiences, and you will then be able to know how at least one can be deceived. In 1882, a horse came to the college with a swollen and running eye—the near one. My first opinion was that it was ophthalmia from an ordinary cold or injury. Next morning I found it to be typical pink-eye and this was the forerunner of an extensive outbreak. Two or three years after I was called to see a horse which had been off work for a couple of days, and whose legs had got gummy. I saw him; his legs *were* thickened; he was fresh, and could lift his feet too well to be comfortable for those near him, and I gave him a dose of physic. In the afternoon I was again called in and found him in mortal agony—temp. 105°; pulse very rapid; m.m. injected, eyelids swollen, and every usual symptom of pink-eye accompanied by acute abdominal pain.

I gave him anodynes, but he got no relief, and died the next day.

Now in this case I am of opinion that if he had not had the physic, the effects of the poison of pink-eye would not have been concentrated in the bowels, and he might have recovered.

One most distinctive sign of influenza is the suddenness of the onset. It is no rare thing to be called to see an animal which worked all yesterday, ate its supper at night, and yet in the morning is unable to walk without staggering and even falling. Such cases are often reported by the horse-keepers, as supposed injured backs, and we frequently have to float them to the College Infirmary.

On examination of such cases we find high fever and torpidity of all the organs, but no special lesions, such as pneumonia or pleurisy, though in some few cases there *are* lung complications in the course of next few days, but in many others I have seen the temperature to drop from 106° to 101° in twenty-four hours, and never to rise again, and the animal proceed with a rapid

recovery. The late Professor Lewis, when he became hospital surgeon at the College, made up his mind to carefully observe the difference between the methods of treatment as recommended and adopted by Principal Williams, and the methods which he had seen adopted in his younger days; and I never shall forget his telling me about one particular case of influenza with lung complications which he attended. He had been treating the animal for about a week, and it had almost recovered, but was extremely weak, and the respirations were naturally increased in number, but he (Professor Lewis) was perfectly satisfied that the lungs were sound and the animal convalescent. On the same evening he was called to see the animal again, and as soon as he entered the stable, at once saw that the patient was much worse and suffering pain. On enquiry he learned that the owner, on his own responsibility, had rubbed both sides of the chest with mustard, "just to heat him up a bit."

Professor Lewis told the owner that the horse was dying, and, on further examination, discovered that he had acute pleurisy, and this was confirmed the next day when the *post-mortem* was made.

Professor Lewis assured me that there was no pleurisy present in the morning, and was convinced that the mustard had induced it.

Not very long ago a healthy horse's sides were rubbed with mustard, and the next day he had pleurisy, which was positively proved by the *post-mortem* examination.

Quite recently Mr. W. R. Davis was called in to see a bad case of influenza, and on his arrival discovered the owner rubbing some embrocation on the animal's side "to warm it." Mr. Davis told him to desist, and just to watch what would happen in a few minutes, and in a very short time the animal exhibited signs of great pain, and began to blow and perspire. The irritant was washed off, and the animal soon settled, and in a few days was convalescent, and is now at work. I remember, many years ago, being a great believer in a certain drug for influenza pneumonia, and, in the absence of my father, happened to have a bad case. Well, after diagnosis I ordered fomentations, and administered aconite twice a day. It seemed curious to me that, though I had placed the animal in a loose box, gave it every attention *and* aconite, it still got worse. Fortunately, my father returned on the Saturday night, when I was in despair, and I immediately took him to see the case, and he, after examination, altered the treatment. We drove away together, and after a few minutes of silence, he said, "Look here, young man, you have been trying to kill that horse with aconite." I, if it were possible, blushed, and said I had orthodoxically been giving that drug, but had begun to think it wasn't much good. To make a long story short, the horse recovered, but certainly was nearly killed by my administration of aconite.

Perhaps after giving you a few of my experiences and those of my friends, you will permit me to give my present day views as regards influenza, and we may then discuss them. I am of opinion from several years' experience, that the primary cause of all forms is insanitary surroundings.

I feel convinced that if every stable were perfect, the disease would soon become unknown, but at the same time I do not deny that it may become panzootic from one single stable. From my experience the disease is enzootic to many stables and may from them become panzootic or only epizootic.

We have in Edinburgh several stables in which so-called influenza occurs yearly, but from pecuniary and other reasons, we cannot get these stables altered, and have consequently yearly outbreaks.

Having now given you a sketch of the disease, it would be well to give you my ideas as to its cause. I might state that 35 or 36 years ago my father recognised it as a disease that was bound to run its course, and one which could neither be retarded nor hurried, as regards its termination, and at the same time he was convinced that if an attempt were made to do either the

one or the other, the results would be unsatisfactory. In my opinion—not as a bacteriologist but as an ordinary practitioner—I think there are two causes of the disease known as influenza.

The first cause is the emanation of gaseous exhalations from certain sources which might be removed or destroyed, by proper drainage and ventilation; it more frequently happens that the patient is removed from the cause, than the cause being removed from the patient. If you take a bad case of influenza from a bad stable and place it in a good loose box, it will recover without much medicine, but remember, though I say without much medicine, I mean without much "so-called medicine." Such cases require the greatest care and attention, and though they get little or no quantity of drugs, they must be watched from stage to stage of the disease, and it is only the practitioner with the large heart, and the self-confident heart, who can see them nearly dead without giving them something or other to "back them up," and even yet desist and perhaps shortly afterwards heave a sigh of relief and say to himself, "Well, I didn't nearly kill him." The weak-kneed man usually, as far as I have seen, kills them with kindness and medicine—both good enough in their way, but still weak-kneed and unscientific.

In these cases then which I look upon as ptomaine poisoning, with sudden and great depression, great fever and utter collapse, I would and do advocate immediate removal to a place where the sanitary conditions are as nearly perfect as it is possible to obtain. As regards medicine I would administer an antiseptic; furthermore, I would put on warm clothing and bandages, have plenty of cold water at hand for him to drink at any time, and if there be any appetite, would offer some sloppy food; but I am most strongly opposed to the administration of large doses of stimulants, or of drenching them with gruel or milk. I think that if they won't take food themselves, that it is almost cruel to force food upon them; it nauseates them, and poor brutes, though they want to vomit they can't, and so must suffer all the more.

Now to the second form. It is one in which not only is the ptomaine of the disease absorbed into the system, but one in which the organism also gets entrance, and in these cases there is no chance of a sudden recovery; the disease will and must run its course.

Now I take it that Nature tries to eliminate the poison either by the bowels or by the lungs—most frequently by the lungs, and consequently we have a congestion of those glands—later on an inflammation—and then the disease is known, as the pneumonic form of influenza.

In other cases the poison seems cast out into the cellular tissues, and we have pink-eye. Now I would specially speak about the pneumonic form.

It is one enough to frighten any practitioner; the prostration is so great that death seems imminent.

In the olden days my father used to give a small dose of aloes, rowel the breast, blister the sides, used sometimes large quantities of stimulants, and bled them, but they died in spite of all this.

Now, for the last thirty odd years, mustard and whiskey are things never dispensed with us.

Fresh air—no contamination—has been the secret of success in the very worst form of disease, but it requires great nerve to resist "doing something" when they are seen to be on the point of death, and it is that "doing something" which braces them up for the while, but which in a few hours puts them still further back, that is the cause of the great mortality.

There are at present two cases in the College which were most seriously ill, and which in the old days and treatment, my father tells me, would have been dead in a couple of days, yet they have received hardly any medicine, and are now convalescent.

The PRESIDENT said that he, and he was sure all present, felt much indebted to Professor Williams for his extremely interesting and practical paper. In his own practice of late he had had several cases of pneumonic influenza, which fortunately had done well. Many points had been submitted to them, in the paper just read, well worthy of discussion, and he therefore invited the members present to discuss it frankly and fully.

Mr. HUNTING, sen., thanked Professor Williams for his most sensible paper, and fully agreed with him that medicine and blistering, in this disease, frequently did far more harm than good. Fresh and pure air, combined with gentle exercise, were the sovereign remedies for influenza. He did not quite agree with all they had been told. It would be extremely awkward, when no medicine were given, if a patient should die. Such an occurrence would be very detrimental to a practitioner's reputation. No harm, even some amount of good, would be done by even making up a common electuary, and placing it on the animal's tongue. He had great faith in nursing, and removal from the stable. When a good stable or box could not be got, he had many times put patients into a field or stackyard, procured carts and stuck them up on end, then roofing them with a stack-cover. Giving patients exercise he believed was efficacious. Dozens had he seen, with each leg as big as four, that recovered, and he believed mainly due to the exercise given. He had grave doubts whether sanitation had much to do with causing influenza, as he had seen the worst of cases in the best stables, with splendid sanitary arrangements. Professor Williams had hit the nail on the head when he said we must have patience. He believed in *bis medicatrix naturæ*, and that once you get the digestive organs to act, with handfuls of grass, carrots, etc., cases will quickly recover.

Mr. H. HUNTER considered the paper that had been read was full of points for their consideration and discussion. He endorsed Mr. Hunting's ideas as regarded the influence of sanitation in this disease, as he had been called in to treat many cases of the worst kind in stables that no fault could be found with. There was something beyond that which determined the occurrence and the degree of illness. He questioned how the application of mustard could cause pleurisy. He could not believe it was possible, and thought it must have existed before the application of the mustard. On his own person he had experienced great relief from counter-irritation, as he had been a great sufferer from chest affections. In pneumonia in horses he had frequently seen marked improvement from blistering, and thought that cantharides was better than mustard, as its effects were more lasting and not so violent. The medicines he used were spts. nitr., ether, liq. ammon. aromat., occasionally digitalis and ammon. carbonate. They were not given in laryngeal or pharyngeal affections, and were always carefully administered, sometimes with linseed tea instead of water.

Mr. DEANS, as a young member, asked Mr. Hunting how the removal of horses affected with influenza from good stables, well-ventilated, etc., to other stables or the open air, was likely to benefit them. He could see the likely benefit were this done where stables were faulty.

Mr. HUNTING replied that, in his opinion, patients should always be removed from a place containing the germs of disease, as in sickness in a house, when the medical man removed his patient to another room.

MAJOR DURRANT agreed with Mr. Hunting in the very beneficial effect of the removal of influenza cases from their usual stables, also that gentle exercise was frequently of benefit. He gave very little medicine, indeed, in the army they were not supplied with much of it. Simple remedies, such as potass. nitr. and soda salicylate, combined with careful nursing and attention, he recommended. He would like to ask Professor Williams his percentage of

recoveries. In the army the mortality from influenza was ½ of 1 per cent.

Mr. A. HUNTER agreed with all that had been said as to the removal from stables, but it was not always practicable. He deemed it dangerous, however, to subject patients to severe weather, when that was the only alternative offered. He believed in giving medicines, such as ether liq. ammon. and even aconite, also in the application of blisters, and would always do so. He could not get over the fact of the good that blisters, more particularly fly blisters, had so often done himself, and to them he attributed the preservation of his life.

Mr. W. HUNTER, while thanking Professor Williams, could not agree with him on many important points. He believed influenza to be due to a germ that might linger for months, even years, in a stable. He believed in the application of mustard, but at the same time thought it was frequently overdone. The application of ¼lb. of mustard could do no harm. This week he had attended two cases of influenza. In one, the temp. was 106°, pulse 72. Bronchitis, a hard dry cough, great prostration, and inappetence were present. He applied mustard to the sides and gave medicine, and the temperature had fallen to 101° and the patient was out of danger. In the second case the temperature was 106 1-5th, pulse 72, and symptoms similar to the other; was treated in a similar fashion and with like good results. Regarding the water given to drink, he was most particular that it should not be cold, while the removal of patients in this disease was what he always insisted on. Ammon. carb., potass. carb., potass. nitr., and digitalis were the medicines he mostly used, and these two and three times daily.

Mr. PEELE enquired from Mr. Hunting, if the cases he had referred to in his practice, recovered, and was informed in the affirmative.

Mr. PEELE proceeded to advocate the value of pure air, no counter-irritation, and the use of a compound of ammon. bicarb. and quinine, which latter he considered a good medicine in influenza.

Mr. MOIR stated that his experience of influenza in horses extended over a considerable period of time, and that he felt quite sure that the many cases of disease then termed influenza, which came under his notice thirty to forty years ago, did not present such well-marked specific symptoms as were shown in the outbreaks of influenza, otherwise pink eye, at the end of the seventies, and since then at different periods. If both were the same disease, then the type of it had distinctly altered. His opinion was that the disease more lately in evidence has been the true influenza, due to the presence of a specific micro-organism or bacillus in the systems of those affected, and the same disease that has affected mankind. The isolation, cultivation, and inoculation of the bacillus by bacteriologists, have placed the cause of this disease beyond a doubt. He agreed with Professor Williams that defective hygienic conditions frequently induced fever, great depression, loss of appetite, and symptoms generally that resembled those of influenza, but which, strictly speaking, were not those of true influenza. These cases, if removed from the cause, viz., the malaria, etc., of unhealthy stables, would, as a rule, quickly recover with very little help from medicines, were they stimulants external and internal. Indeed, his experience was, after having practised and also seen some variety of treatment, that influenza, in any form, is best treated without stimulants and blistering. He recollected, during the pink eye outbreak in Manchester, in 1890-91, seeing a large stable full of horses in various stages of the disease. The owner had lost many, but had become so tired of the want of success of his veterinary surgeon, that he had ceased to call him in, and found he was much more fortunate. Although the weather at the time was very severe, by turning out the horses to whom the disease had not extended, the owner was satisfied that he had stopped its progress. On further inquiry he had found that the active form of treatment had been that

pursued, and he thought that a remarkable proof of the value of pure air had been demonstrated. Mr. Moir stated that it had been his lot to have large numbers of horses passing through his hands for sale, consigned from all parts of the country, and from Ireland and Belgium. Many of them came into his stables from time to time in urgent need of medical care, and as he considered it politic not to take any responsibility as regarded treating them, with the exception of their removal to the care of a veterinary surgeon of recognised ability, he had been afforded many opportunities of observing the success that attended Principal Williams' treatment of influenza, to whose college all his serious cases were removed. His son to-day had given them in his practical paper, the line of treatment pursued by his father and himself, and he was pleased to be there to testify to the soundness of it, as shown by its success with the many cases of undoubted pink eye, and many with pneumonic complications that were successfully entrusted to their charge. He assured the meeting there were many cases for which he would not have given more than the prices of their skins, that, to his surprise, recovered. He admitted that, having been educated by Professor Dick to apply blisters when the breathing was hurried and indicated that the lungs and pleura were congested or inflamed. and to take blood from the jugular vein in the early stages—the latter a practice which had long been discontinued—he viewed with some amount of concern what seemed to him to be the do-nothing treatment. The counter-irritation to the sides, the front of the chest, larynx, and trachea had been abandoned by the Principal, as also the giving of stimulants, and as "Facts are stubborn chiels that winna ding," he had been thoroughly convinced that Principal Williams's teaching and practice were correct, and that the old style was wrong. Under the latter he had seen many fatal cases, but very few, almost none, under the system advocated by the reader of the paper.

Mr. ELPHICK recommended the humane treatment, and on that account seldom or ever blistered influenza cases, and thought he was as successful as those who did so. He did not think that any line of treatment could avert the death of some cases.

Professor WILLIAMS replied briefly. He was gratified that Mr. Hunting and other speakers agreed with many of his opinions, and he assured Mr. Hunting he fully recognised the importance that something should be done or an appearance of doing something to satisfy clients, as they all had to earn their livelihood. At the same time in Scotland they did not seem to find it necessary to make this point so much of a study, as appeared to be required in England. He had met with cases of influenza in good stables, but had always found his first cases in faulty stables, such as those of small contractors. In reply to Major Durrant he could not specify his percentage of recoveries exactly, but he could say that he could hardly remember when his father and he had last a case of influenza excepting those he had cited in his paper. He had a few years ago temporary charge of the cavalry horses near Edinburgh on which occasion, with the exception of the first case, which was dying when it was given over to his care, there were about 80 horses confined to barracks suffering from influenza, not one of which died. He begged to thank the President and members of the Society for the very kind way in which they had received his short paper. He drew it up more for the purpose of eliciting a friendly and profitable discussion, and therefore had subordinated the theoretical to the practical.

Mr. H. HUNTER, seconded by Mr. PEELE, moved a hearty vote of thanks to Professor Williams, and the proceedings terminated with a vote of thanks to the President proposed by Mr. ELPHICK, for the excellent service he had rendered the Society during the past year.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 363.)

I DON'T believe the vitality of the virus is very great outside the living animal, for we notice how soon the disease runs its course in a district or kennel, and, when the susceptible animals have passed through the attack, the disease disappears, and if the ordinary methods of cleansing and disinfecting are properly carried out, the disease does not re-appear when fresh healthy animals are brought in. I am also convinced that when the disease has been located in a district for some time that the virus becomes attenuated or weaker, and that less power of resistance on the part of dogs is required to avoid an attack. This is confirmed in practice, for I often find that the first few cases of the disease are the most difficult to combat, and that the fatalities are more numerous than when the disease has passed from one to another for a few weeks.

I have talked about the treatment of the disease, but I would prefer to call it the management of it. The first thing is the necessary accommodation. No veterinary surgeon who lays himself out for dog practice should be without a properly-constructed set of hospital kennels at or near his infirmary. These may be put up at a moderate cost in the following way :—Given a blank wall, ten feet high and ten yards long, with a south or south-west aspect, you will then have room for ten boxes three feet high, which should extend forward ten feet. The shore roof should extend at least a yard over the front of the boxes to prevent snow or rain beating in. The partitions should be extended to the roof and be of pickled wood—*i.e.*, wood saturated with creosote or carbolic acid, The roof should be constructed by first covering with half-inch match-boards, on which should be nicely placed some piling straw, about an inch deep, and upon which some corrugated iron sheets should be fastened. This form of roofing I find to be cool in summer and warm in winter. The floor should be laid with dust bricks or floor quarries, well bedded in cement to insure dryness and facilitate cleansing. At the far end of each box should be a stage for the animal to sleep upon. The front should be of light iron-work from top to bottom, with a door in the centre. These can be procured to order and measure from Bolton and Paul at reasonable cost. I have perhaps, been wasting your time in describing the sort of kennel you should have, but I hope you will be induced to try them, because they are the most suitable dog-boxes I have seen. I forgot to say that a canvas blind on roller to each box is very useful. If our clients see the conveniences you have, and the care that is bestowed upon their animals, they never hesitate to send them into hospital, which is an immense advantage to us. When we are called in to see a dog with some of the premonitory symptoms of distemper, it is almost impossible to make a correct diagnosis owing to the presence of the lady owner, or to the shyness or peevishness of the patient, and we have often to waste half-an-hour in getting on terms with it. This is all avoided by ordering him to be sent into hospital, where, at your leisure you can soon get upon good terms with him and correctly diagnose his malady. Given that you have distemper to deal with which has not run on to any complication, the first thing to do is to see that his kennel is a proper temperature (as near 60 degrees F. as possible) ; also see that he has a good bed of clean straw sufficient for him to hide in if he likes. Administer a mild laxative—salts and senna. Make his eyes and nose clean ; and put a few drops of terebine or eucalyptus on to a sponge, and let him inhale three or four breaths. This cleansing and inhalation should be done three or four times a day. The evacuations should be immediately disinfected with sulphate of iron, and the floor dredged with chloride of lime. The food must be of the lightest—*boiled* milk thickened with arrowroot,

chicken broth made by stewing an old broody hen to a pulp, and a little bit of fish and occasionally a dry milk biscuit is all that is necessary. His water should be frequently changed and given cold, iced if necessary. After the bowels have been nicely moved, I find a mixture of tinct. gentian co., sp. æther, nit. and liq. ammonia, acet. conc. in equal parts, given twice or three times a day, is all that is required.

While talking about what should be given as medicine, it may be well to say how it should be administered. We have all experienced the difficulty and danger of dosing little pet dogs, especially if they have been periodically dosed with buckthorn and oil. The best way is to put a tape round the mouth and tied behind the ears. Then let your assistant take the fore-legs in one hand and the hind-legs in the other, turn him on to his back, or if necessary suspend him in the position ; and I generally find they will swallow the draught without resistance.

With this management nature is generally able to throw off the disease, and the patient is left very prostrate. Now is the time to increase the nutritive value of the food, but on no account give medical tonics or stimulants. If the appetite has not entirely failed, white meat, such as rabbit, chicken, well-cooked calf's foot will suit the case ; but if the patient refuses food, then we have a valuable preparation in "Brand's Essence," which I have found of immense value in such prostrating diseases. During convalescence a vegetable tonic pill twice a day will be beneficial.

I think I have said enough to weary you about the management of simple distemper, and will now briefly allude to the complications. I say briefly, because the rules laid down in my management of the simple form in great measure apply to the complications, especially as to feeding and sanitation.

Pneumonic.—Put on a mustard and linseed poultice over the whole thoracic surface, and keep it on for five or six hours. Then make the skin clean with warm damp cloth, and envelop the chest in flannel stitched along the back, with holes cut for forelegs. Eyes and nose frequently sponged with warm water, and a little stimulant in the form of whisky and water every three hours. If the cough is very troublesome, I give a few drops of chlorodyne with benefit. If the temperature is very high, I give one good dose of quinine with good results.

Bilious.—This is often a very troublesome form of the disease, and will prove fatal frequently in spite of our best endeavours. I put the animal into a warm bath up to his shoulders when sitting down, the heat of which should be about the normal temperature of the body, and well coloured with mustard. Keep him in for twenty minutes unless exhaustion comes on, and have him made thoroughly dry afterwards. Then apply a little ammonia liniment over the region of the liver, and give small doses of nitro. hydro. chlor. in linseed tea. In this disorder it is necessary to keep an eye on the bowel action, as the natural aperient is absent. I find that linseed tea, with an occasional glycerine suppository, is the best method.

Enteric.—This, as I have said, is nearly always of septic origin and is more frequently seen in cases that have been left to themselves, and where injudicious feeding has led to decomposition of food. If we suspect overloading of bowels and have tympany as a symptom, we must first endeavour to evacuate their contents without prostrating the patient. The best way is to give a little senna tea and peppermint, and rub on the skin covering abdomen some ammonia liniment. When we have overcome the distention, we have recourse to such agents as chlorate of potash, Condy's fluid, &c. I have found great benefit from the frequent use of coffee, a strong decoction of which may be used as a vehicle for medicine.

If we get tenesmus then I use belladonna suppository. In this form of the affection we must not allow any solid food. Barley water may be allowed

ad lib, and the strength sustained with "Brand's Essence," which is so easily assimilated and does not become putrid after swallowing. If the animal is very prostrate, brandy and soda may be given.

Cinnamon has a good effect in restoring the bowels to healthy action, but why it should be better than other barks I cannot explain.

It is highly desirable that the evacuations should be immediately removed and burned if convenient.

Nervous.—I have now come to a form of the disease that nearly always kills or maims our patient. Take the hair off the whole length of the dorsal and cervical vertebrae, and put on strong belladonna plaster, stimulate legs and feet with mustard, use belladonna electuary if the fits are frequent, and keep in a dark box.

Sequelæ—Shedding of hair.—This is sometimes very troublesome, and requires time and attention. Give tonics, shampoo often with warm, soft water, soft soap, and borax, rinse in tepid water, rub dry, and brush frequently or rub with dog glove.

Pustulous Eczema.—Give small doses of arsenic, bathe affected parts with bran water, and use oleate of zinc.

Weak Eyes.—Give tonics, foment with milk and water, and use weak solution of sulphate of zinc. If the cornea shows signs of ulceration, put a thread seton through the skin between back of eye and ear, and apply weak solution of chloride of zinc to the ulcer.

Deafness.—This is nearly always permanent from perforation, but, as it sometimes arises from accumulation of wax, it is wise to try the effect of oiling internal ear, and syringing with warm water.

Chorea.—This I have always looked upon as a chronic affection, but I am told that arsenic will cure it in the human subject, and I shall take the first opportunity I have of trying it in the dog. Nux vomica has been frequently recommended in this disorder, but I find the dog is very susceptible to its toxic effects, and it should always be given cautiously.

I must apologise for a very uninteresting paper. I have given more time to details than may appear necessary to most of you, but I wish to impress upon the younger members the fact, as it appears to me, that in casting out into the deep waters of theory, we are leaving fallow a field that is rapidly becoming the playground for keepers, dog-dealers, fanciers, and patent medicine vendors.

Discussion.

Mr. MALCOLM led off. He said it was very seldom that he had anything to do with distemper; nevertheless, he was very much interested in it. He was quite in accord with Mr. Carless's definition of distemper, but he had not been so fortunate as Mr. Carless in being able to trace every case to its predecessor. He had, however, no doubt about there having been a predecessor, even though he had failed to trace it. Like Mr. Carless, he also believed that no breed of dogs was exempt from the malady. He was not speaking from personal experience in saying that the better breed of dogs suffered more than the common breed, but it was the general opinion that such was the case. He thought there was scarcely a disease in the whole domain of veterinary science about which they knew much less, for it assumed so many different forms. Mr. Carless had dwelt upon the treatment of the disease and the great necessity of good accommodation and good nursing. He (the speaker) thought there was nothing of greater importance in the successful treatment of distemper than good nursing and good accommodation where the temperature is maintained at a proper level. Recently, with a dog of his own, instead of giving him any medicine for distemper, he kept him in a place at a regular temperature and gave him light food, with the result that he made capital progress.

Mr. GOOCH said he did not see a large amount of dog practice, although he thought it paid the practitioner extremely well. If there was a disease which required nursing, good sanitation and proper management, it was distemper in the dog. His experience was that the bilious form of the disease was the most fatal. Nine-tenths of the bilious cases he had treated had terminated fatally. As to medicine, he found it answer best in the form of a pill, as it was easier to administer, particularly in the case of a small dog.

Mr. CROWHURST was certainly of opinion that the more highly bred the dogs, the more severely were they attacked. He remembered some greyhounds of a particular breed having distemper regularly, and on crossing the breed, they suffered from the disease no longer. He believed in kindness and good nursing being the foundation of the treatment.

Mr. GREEN said he was seeking information on the subject. For years he had been of opinion that the more valuable and the better the breed of the animal, the more susceptible it was to some form of distemper. The cur that was running about seldom died of distemper. He had had most trouble with foxhounds and greyhounds. He had tried all sorts of remedies, but the animals kept dying. He seldom administered stimulants, such as whisky, &c. With regard to the treatment of chorea, he had for some three or four years had the benefit of a medical friend's advice, and he suggested the use of arsenic. He formerly relied on nux vomica, and that sort of thing. He now recommended $\frac{1}{4}$ of a grain of arsenic three or four times a week, with good results, but he could not rely on arsenic as a sure and certain cure. In the case of ulceration of the cornea, he had used a solution of zinc. He had tried the seton spoken of, but it was such a trouble to the dog that he had left off using it, and instead he had touched the part affected with nitrate of silver, with better results.

Mr. BARLING said his worst experience had been with foxhound puppies. In the South Hereford Kennels they had lost a great many. Nearly every case was in the jaundice form, and almost everything they did was unavailing. Next to foxhounds, he had had most trouble with pugs, nearly eight out of ten of which got ulceration of the cornea. He found nitrate of silver was the best form of treatment.

Mr. BYNER did not think the malady arose spontaneously, in which opinion he was backed up by personal experience. The best treatment, to his mind was to nurse the dog properly, and give a small dose of nitrate of potash three or four times a day on the tongue dry. For chorea, he had tried nux vomica and arsenic combined, but had not had good results. He thought bull dogs and short-coated dogs generally suffered most from bilious distemper. As regards ulceration of the cornea, he did not believe in the adoption of severe measures. The best thing to do was to treat the patient antiseptically, and leave the rest to nature.

Mr. SMITH, in a very few words, said he most heartily agreed with the different treatments recommended.

Mr. GOOCH would like to ask the essayist a question which had escaped his memory. Had Mr. Carless ever tried electricity? and, if so, with what result?

Mr. PRICKETT said he looked upon the bilious form as the most difficult and uncertain. He agreed with the essayist as to the main principle of treating distemper.

Mr. GREEN also had a question for Mr. Carless. Did that gentleman think that contagion might lurk in bricks and mortar or the kennel?

Mr. BROOKE knew of a bad result of distemper, which had not \been alluded to, and that was paralysis. He had just discharged a successful case of bronchial distemper, which he treated by steaming hay in a small bucket.

Mr. SMITH mentioned incidentally that he had obtained a marvellous

effect from the steam of water in which potatoes had been boiled.

Mr. WILSON said his experience was limited principally to greyhounds.

Mr. DAWES (Hon. Sec.) declared that Mr. Carless had treated the subject in such a manner that there was little left for them to discuss. He agreed that management was the thing. He thought lots of dogs died of distemper through having too much medicine given to them. The best thing was to have the dog at their own infirmary and then deal with it as they liked. If the dog were at its own home they must keep giving it medicine, or their client would think they were neglecting it.

Mr. J. BLAKEWAY (Hon. Treasurer) said they always got something good from Mr. Carless, who had on that occasion given them much food for reflection. He desired to raise the point as to whether there was ever a recurrence of distemper. Some people held that it did not recur, and a veterinary surgeon would often be asked if a dog had had distemper in order to satisfy the owner that it would not have it a second time. He (the speaker) believed that it occasionally recurred. In reference to the construction of kennels, he had found that in the summer time dogs with distemper were better treated in the open air, and in winter they should be kept in a room at a regular temperature—say 60 degrees F. He agreed with preceding speakers as to the efficacy of nitrate of silver, and proceeded to state that in his own experience it had been bloodhounds which had been most subject to the disease. A beneficial article of diet, to his idea, was raw eggs beaten up with new milk. In answer to Mr. Smith, he failed to see any special charm about the potato water, and thought it was best to add a little carbolic acid or tincture of myrrh when adopting the steaming process. He was taught at college never to touch the eyes at all, but whenever he found a discharge from the eyes, he always bathed them with warm water or milk and water.

Mr. COLLETT said he was not blessed with an extensive dog practice, and his chief distemper patients always died. Good sanitation, pure air, equal temperature, and judicious diet were what he considered the best remedies. He gave very little medicine.

The PRESIDENT, in closing the discussion, said he must personally thank his friend Mr. Carless for having come forward on that occasion with so interesting and instructive a paper. There were few of them but had had some dog practice, and there was no disease affecting that animal which was so common or so important, and he might even add so fatal as distemper. He had very little to say in contradiction of what Mr. Carless had already laid down, but he was very highly of opinion that the disease before long would be found to be due to a microbe. He was also satisfied in his mind that when that was so, the future treatment of the disease which was likely to be attended with the most success would be the antitoxin treatment, in which he, personally, had the greatest faith. With regard to the spontaneous origin of the disease, it was a very interesting question, and he for one could not say that it was not spontaneous. At the same time the manner in which the disease did arise from time to time is perfectly inexplicable if it were due to contagion. He also had found that the better the breed the more susceptible to the disease did the animal become. He agreed that the sanitary surroundings should be most perfect and the temperature even. The most fatal cases in his experience were those of the bilious form. He had come to the conclusion that foxhounds were the most likely victims. He recommended Easton's syrup, and was very partial to hot baths, but in the latter case the greatest care must be taken that the patient did not take cold.

Mr. CARLESS, in reply, agreed with Mr. Malcolm that it was difficult to trace the disease, but nevertheless it was traceable, and there was no doubt

that all cases ought to be governed by the same laws as other contagious diseases. It was very much the same as influenza in the human subject. It was caught somewhere, but you don't know where, and when it passed from the simple form it became a very serious matter. He thought nitrate of silver was a very good thing if the patient was in the infirmary. He thought sometimes a case could be traced to the sub-soil on which the kennel was built. As to the use of the electric battery, mentioned by Mr. Gooch, he tried it some years ago, but it occasioned such agony and fright to the patient that he could hardly get near it the second time. However, now that electrical instruments were in a greatly improved state to what they were at the time of which he was speaking, he did not see why good should not result from the use of electricity, especially in a case of chorea of a chronic nature, He thought distemper did recur, but not at short intervals, and the second attack was not likely to be a severe one. It reminded him in that respect of measles in the human subject. In regard to steaming he hardly agreed with it. He thought the inhalation of some little drug was better than steam, and produced the same effect. He was of the same opinion as Mr. Dawes, who said that the less they had to do with physic the better. In heating a kennel, he did not advocate the use of spirit lamps, as he believed they would find hot bricks or hot water bottles answer the purpose equally well.

Mr. MALCOLM proposed a vote of thanks to Mr. Carless for his very practical and admirable paper. He was sure it had been appreciated, and the fact that such a long discussion had been provoked pointed to the same conclusion.

Mr. GOOCH briefly seconded the vote of thanks, which was heartily accorded and duly acknowledged by Mr. Carless.

Place of Next Meeting.

Nottingham or Derby were at first proposed. Eventually, on its being stated that the Association were under an obligation to go to Worcester, it was resolved to hold the next gathering there.

A vote of thanks to the President for his services in the chair having been cheerfully passed, the members adjourned to another room and partook of a meat tea.

H. J. DAWES, *Hon. Sec.*

THE CHARTER OF THE ROYAL VETERINARY COLLEGE OF IRELAND.

VICTORIA, by the Grace of God, of the United Kingdom of Great Britain and Ireland, Queen, Defender of the Faith, and so forth, to all to whom these Presents shall come greeting :

WHEREAS the Royal College of Veterinary Surgeons, London, was incorporated by Royal Charter on the 8th March, in the 7th Year of Our Reign :

AND WHEREAS by Section IV. of the Veterinary Surgeons Act, 1881, 44 & 45 Victoria, cap. 62, It is enacted that the Royal College of Veterinary Surgeons shall be bound to make provision in the manner permitted by their Charters for the Examination in England, of the students attending the veterinary college there, and in Scotland of the students attending the several Scotch veterinary colleges, and in Ireland whenever a veterinary college shall be established in that country, and to admit and register such students as have passed the examinations as members of the said Royal College under the provisions of such Charters and the said Act.

AND WHEREAS it is desirable that a college for the instruction of students of the veterinary art and for the advancement of veterinary science should be established in Ireland for the following reasons :—

1. That Ireland may be regarded as a purely agricultural country, the material resources of which are almost exclusively derivable from its live stock, and, therefore, it is desirable that some impetus should be given to the study of diseases affecting domesticated animals of all kinds by having a centre for the investigation of such diseases and their treatment, and that such a centre of education would lead to scientific enquiries being made into the cause and nature of various epidemics of disease occurring amongst horses, cattle, and domesticated animals generally, a matter of great importance in Ireland, considering the great loss sustained by the country from such plagues as foot and mouth disease, pleuro-pneumonia, swine fever, and such like diseases.

2. That a recent Regulation of the General Medical Council requires that all candidates for the examination for the Diploma in State Medicine must produce evidence of having obtained instruction in the diseases of animals communicable to man, and that in the absence of a college for the instruction of students in such diseases, Irish students must go to England, Scotland, or elsewhere, to obtain the required instruction in these subjects, and, therefore, the establishment of a veterinary college would be likely to lead to researches being made, not alone as regards the origin and spread of epidemics amongst animals, but also as to the mode by which many infectious diseases are communicated by animals to man, and thus materially aid the progress of medicine in Ireland.

3. That the college would afford facilities for instructions to agricultural students and school teachers under the National Board of Education, and others, which would be of material use throughout the country, and the schools therein, in connection with the breeding, rearing, and feeding of animals, as well as affording an opportunity of acquiring a knowledge of the common forms of diseases occurring amongst horses, cattle, sheep, swine, dogs, &c.

NOW THEREFORE KNOW YE THAT WE being desirous to encourage a design so laudable, of Our special grace, certain knowledge, and mere motion have willed, granted, ordained, and declared, and do by these Presents for us, our heirs and successors will, grant, ordain, and declare that Ambrose Birmingham, of the Medical School, Cecilia Street, in the City of Dublin, Professor of Anatomy in the Catholic University; Thomas Carroll, of the Albert Model Farm, Glasnevin, in the County of Dublin, Agricultural Superintendent under the Board of National Education (Ireland); Daniel John Cunningham, of 43, Fitzwilliam-place, in the City of Dublin, Professor of Anatomy and Surgery, Dublin University; Alderman Valentine B. Dillon, of 7, Rutland-square, east, in the City of Dublin, Solicitor; William Field, of Blackrock, in the County of Dublin, Member of Parliament, and President of the Irish Cattle Trades and Stock Owners Association; Samuel Haughton, of 12, Northbrook-road, east, in the City of Dublin, Senior Fellow of Trinity College, Dublin; Thomas Drummond Lambert, of South Richmond Street, in the City of Dublin, Veterinary Surgeon, Fellow of the Royal College of Veterinary Surgeons; Christopher John Nixon, of 2, Merrion-square, north, in the City of Dublin, Professor of Medicine in the Catholic University, Ireland; William Thornley Stoker, of 8, Ely-place, in the City of Dublin, Fellow of the Royal College of Surgeons, Ireland; Joseph R. O'Reilly, of Sans Souci, Booterstown, in the County of Dublin, Deputy Lieutenant; Richard Francis Tobin, of 59, Stephen's-green, in the City of Dublin, Fellow of the Royal College of Surgeons, Ireland; Ex-officio the District Veterinary Officer in Ireland for the time being of the Army Veterinary Department; being twelve persons nominated by us. Walter Boyd, of 66, Merrion-square, south, in the City of Dublin, Judge of the Court of Bankruptcy; Thomas Pierce Butler, of Ballintemple, Tullow, in the County of Carlow, Bart.;

Charles Alexander Cameron, of 51, Pembroke-road, in the City of Dublin, Knight, Professor of Chemistry and Hygiene, Royal College of Surgeons, Ireland; Gerald Richard Dease, of Celbridge Abbey, Celbridge, in the County of Kildare, Colonel; Robert Fowler, of Rahanstown, Enfield, in the County of Meath, Deputy Lieutenant; John Freeman, of Harry Street, in the City of Dublin, Veterinary Surgeon, Fellow of the Royal College of Veterinary Surgeons; Walter Noel Hartley, of 36, Waterloo-road, in the City of Dublin, Professor of Chemistry and Dean of Faculty, Royal College of Science, Ireland; Mathew Hedley, of 6, Royal Terrace, Kingstown, in the County of Dublin, Veterinary Surgeon, Fellow of the Royal College of Veterinary Surgeons, Chief Inspector of the Veterinary Department of Our Privy Council in Ireland; The Right Reverend Monsignor Gerald Molloy, of the Catholic University of Ireland, Rector; William Pallin, of the Curragh, in the County of Kildare, Veterinary Surgeon, Member of the Royal College of Veterinary Surgeons; James Talbot Power, of Leopardstown Park, in the County of Dublin, Deputy Lieutenant; James Emerson Reynolds, of 70, Morehampton-road, Donnybrook, in the County of Dublin, Professor of Chemistry, in the Dublin University: being twelve persons nominated by the Council of the Royal Dublin Society. Edmund Gerald Dease, of Rath House, Ballybrittas, in the Queen's County, Deputy Lieutenant; Christopher Talbot Redington, of Kilcornan, Oranmore, in the County of Galway, a Member of Our Privy Council in Ireland; William Homan Newell, of 22, Lansdowne-road, in the City of Dublin, Esq.; and George Francis Fitzgerald, of 7, Ely-place, in the City of Dublin, Fellow of Trinity College, Dublin; being four persons nominated by the Commissioners of National Education in Ireland.

And also four other persons to be hereafter elected by the Subscribers, in accordance with the Bye-Laws to be made as hereinafter provided, and such other persons as shall from time to time be appointed or elected in the manner hereinafter directed, shall be, and forever hereafter continue to be, one Body Politic and Corporate for the purposes aforesaid by the name of "The Royal Veterinary College of Ireland," by which name they shall have perpetual succession and the Common Seal, with full power and authority to alter, vary, and renew the same at their discretion, and by the same name shall sue and be sued, implead and be impleaded, answer and be answered unto in every Court of us, our heirs and successors, and be forever able and capable in law to hold all property now belonging to or held in trust for or subscribed towards the Royal Veterinary College of Ireland, and also to take and acquire, whether by purchase, exchange, gift, bequest, or otherwise, and to hold, possess, and enjoy to them, and their successors as well, absolutely as for any term or number of years or other limited interests, any goods and chattels or other personal property whatsoever, and also be able and capable in the law (notwithstanding the statutes of Mortmain), to take and acquire whether by purchase, exchange, gift, bequest, devise, or otherwise, and to possess, hold, and enjoy to them and their successors as well in fee simple as for any term or number of years or other limited interests, an infirmary for sick animals, operating rooms, laboratories, libraries, class-rooms, a museum or museums, lecture theatres, dissecting, board, and committee rooms, official residence of the Principal or Dean, and other suitable and necessary premises and buildings for the medical treatment of horses and other domesticated animals, and for the education of students in veterinary science, and any other messuages, lands, tenements, or hereditaments whatsoever, the yearly value of which, including the site of the said premises, shall not exceed the sum of £4,000, computing the same respectively at the rack-rent which might have been had or gotten for the same respectively at the time of the acquisition thereof, and shall have full power and authority to dispose of and sell or exchange any goods and chattels or

other personal property, messuages, lands, tenements, and hereditaments in their possession, or so to be by them acquired, and to act in all the concerns of the said Body Politic and Corporate for the purpose aforesaid, and in carrying out the objects of the said College as fully and as effectually as to all intents, effects, constructions, and purposes whatsoever as any other of our liege subjects, or any other body politic or corporate in Our United Kingdom of Great Britain and Ireland, not being under disability, might do in their respective concern.

AND FURTHER, We do hereby expressly direct and declare, that nothing herein contained shall authorize the said Royal Veterinary College of Ireland to acquire any lands, tenements, or hereditaments beyond the extent or annual value hereinbefore provided, and that the acquisition in excess of such extent or annual value shall be void as to such excess, and not further or otherwise.

AND We do hereby grant Our special License and authority unto all and every person and persons, bodies politic and corporate (otherwise competent), to give, devise, grant, sell, give in exchange, demise, alien, and convey in Mortmain unto and to the use of the said college and their successors any messuages, lands, tenements, or hereditaments not exceeding such annual value as aforesaid, hereby nevertheless declaring that it shall not be necessary for such persons or bodies, or any purchasers, takers, or tenants of land and hereditaments from the said college, to inquire as to the annual value of the property which may have been previously acquired by the said college, but this declaration is not to enlarge the power of the said college to acquire messuages, lands, and hereditaments as aforesaid.

WE FURTHER declare that the number of the subscribers to the said Body Politic and Corporate shall be indefinite, with such individual privileges and subject to such conditions as shall appertain respectively unto each by virtue of these presents or by virtue of any Bye-laws to be made as hereinafter provided.

AND WE FURTHER WILL AND ORDAIN that all the students at the hereby constituted College shall be entitled to be admitted members of the Royal College of Veterinary Surgeons, London, after having passed the examination from time to time prescribed by the said Royal College of Veterinary Surgeons, London, and shall be subject to the Rules, Regulations, and Bye-laws of the said Royal College of Veterinary Surgeons, London, in like manner as the students at the affiliated English and Scotch schools, and for this purpose We do further will and ordain that the said Royal College shall be affiliated to the said Royal College of Veterinary Surgeons, London, in like manner as the present affiliated English and Scotch Schools, but with the same right of independent action and responsibility so far as regards its own internal actions and affairs; and WE DECLARE that the Governors shall be empowered to confer upon and grant to such of the students of the said College as they think fit annual or other Exhibitions, Scholarships, Medals, and other Prizes and Certificates of distinction. PROVIDED NEVERTHELESS that no such Certificate or other distinction shall confer the right to practise the arts of Veterinary Medicine and Surgery, or either of them.

AND WE FURTHER DECLARE that the government of the Royal Veterinary College of Ireland shall be vested in the Body Corporate, who for this purpose shall be a Board of Governors consisting of not more than Thirty-two members, of whom one shall be President, six shall be Vice-Presidents, and one shall be treasurer, the said President, Vice-Presidents, and Treasurer to be elected from and by the said Board of Governors in the manner to be fixed by the Bye-laws to be made as hereinafter provided.

WE FURTHER DECLARE that the Thirty-two Governors of the said College shall be appointed as follows:—Twelve members to be nominated by Us,

each and every one of whom shall hold his office during Our will and pleasure; twelve members to be elected by the Royal Dublin Society, each and every one of whom shall be elected in such manner and hold office for such term as the said Royal Dublin Society shall from time to time determine; four members to be elected by the Commissioners of National Education in Ireland, each and every one of whom shall be elected in such manner and hold office for such term as the said Commissioners of National Education in Ireland shall from time to time determine; four members by the Subscribers, each and every one of whom shall be elected in such manner and hold office for such term as shall be determined by the Bye-laws to be made as hereinafter provided.

WE FURTHER DECLARE THAT the President, Vice-Presidents, Treasurer, and Governors, for the time being, shall have full power from time to time at any meeting of their body (not less than seven being a quorum for that or any other purpose), to appoint or re-appoint such persons to be Trustees, Secretary, and also Principal of the said College, and Professors and Assistant Professors, Demonstrators, Hospital Surgeons, and other officers for such periods or such terms, and subject to such conditions as they shall think fit, in accordance with these presents.

AND WE FURTHER WILL AND DIRECT that all questions which shall come before the Governors shall be decided by the majority of the Members present and voting, and that the Chairman at any such meeting shall in all cases have a vote, and in case of an equality of votes shall have a second or casting vote.

AND WE FURTHER WILL, GRANT, AND DECLARE that the President, Vice-Presidents, Treasurer, and Governors for the time being shall have the entire management of and superintendence over the affairs, concerns, property, income, and funds of the said body politic and corporate, so as to carry out the objects and purposes of the said Royal Veterinary College of Ireland, together with the necessary power of appointment and dismissal of the officers and others who shall be appointed in or about the said college, and that in all cases unprovided for by this Charter it shall be lawful for the Governors to act in such manner as shall appear to them best calculated to promote the purposes intended by the college, and the said President, Vice-Presidents, Treasurer, and Governors shall have full power from time to time to make and alter Bye-laws, Rules, and Ordinances, so as the same be not repugnant to the laws of Our realm, or to the general objects and provisions of this Our Charter, or so as to prejudice or to interfere with the rights and privileges granted by Our Charter to the Royal College of Veterinary Surgeons, London.

PROVIDED ALWAYS that all such Bye-laws have been first submitted to Our Lieutenant-General and General-Governor of Ireland for the time being, and approved of by him.

PROVIDED ALWAYS, that it shall be lawful for the President, Vice-Presidents, Treasurer, and Governors (if they shall so think fit) from time to time to appoint from amongst their own body a General Purposes or Executive Committee, of whom the Treasurer shall always be one, and to delegate to such committee all or any of their powers and authorities, and all the acts of such committee (within the scope of their authority) shall be considered to be the acts of the President, Vice-Presidents, Treasurer, and Governors, and such committee may be appointed for any definite or indefinite time, but in either case it shall be lawful for the President, Vice-Presidents, Treasurer, and Governors at any time to revoke the appointment of such committee, and also to make (if they shall think fit) any new appointment.

AND WE DO by these presents will, order, and direct that the said college shall have power to surrender its present or any future Charter or Charters,

or any part or parts thereof, or to accept any new Charter or Charters in manner hereinafter described, after which such surrender or acceptance shall be binding upon members of the Corporation and all others concerned.

THE SURRENDER of the Charter or Charters, or any part or parts thereof, or the acceptance of any new Charter or Charters, shall be made upon petition of the Corporation by resolution passed at a meeting thereof in Dublin, duly summoned with at least fourteen days' notice of the time and place of meeting, and of the resolution proposed, such resolution to be carried by a two-thirds majority of those present and entitled to vote, and confirmed at a subsequent duly summoned meeting after an interval of not less than seven days, by a two-thirds majority of those then present and entitled to vote.

PROVIDED ALWAYS that these Our Letters Patent be enrolled in the Rolls of the Record and Writ Office of the Chancery Division of Our High Court of Justice in Ireland within the space of six calendar months next ensuing the date of these presents.

IN WITNESS whereof, we have caused these Our Letters to be made Patent. WITNESS, Robert Offley Ashburton, Baron Houghton, Our Lieutenant-General and General Governor of Ireland at Dublin, the twenty-seventh day of May in the fifty-eighth year of Our Reign.

J. NUGENT LENTAIGNE, Clerk of the Crown and Hanaper, and Permanent Secretary to the Lord Chancellor of Ireland.

Enrolled in the Consolidated Record and Writ Office of Her Majesty's High Court of Justice in Ireland (Chancery Division), on the Twenty-ninth day of May, 1895.

WILLIAM SULLIVAN, C.R.W.

THE OX-BOT OR WARBLE-FLY (*Hypoderma bovis*): DOES IT EVER ATTACK THE HORSE?

BY A. STEWART MCDOUGALL, M.A., B.SC.

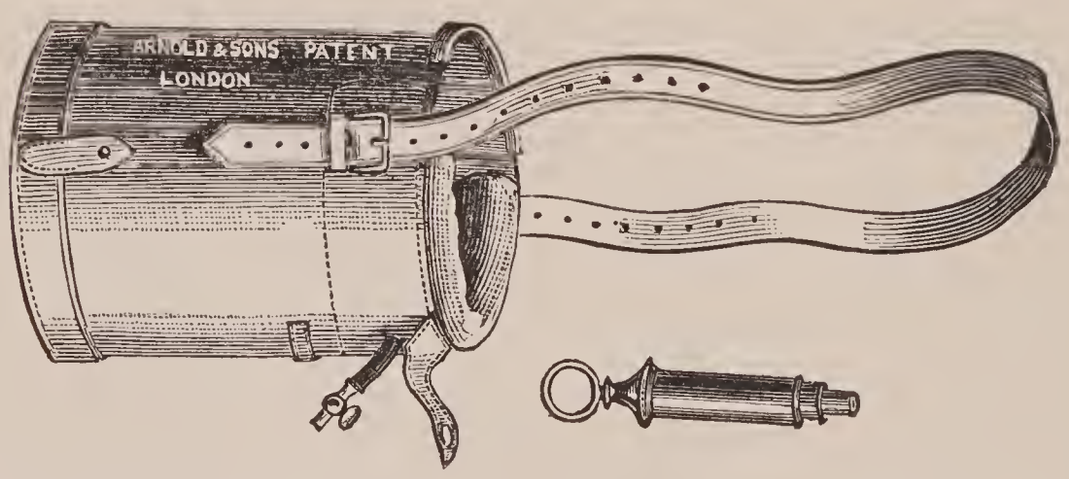
THE interesting account of the observations of Mr. William Sim on the Horse-Bot in the December issue of the VETERINARY JOURNAL has recalled to my mind the doubt as to the identity of the fly known as the Horse-Warble. With reference to Horse-Warble attack, it is agreed that the attacking fly belongs to the genus "Hypoderma," but the species has not been determined with certainty. Hypoderma Loiseti and Hypoderma equi have both been suggested, and in a letter to me in March last Miss Ormerod hints that induced by appearances described in an account of Horse-Warble in her current Annual Report, she feels inclined to add Hypoderma bovis, the Ox-Warble fly, to the list of uncertainties. Since receiving Miss Ormerod's letter I have made inquiries of a good many gentlemen likely to have had opportunities of noticing Horse-Warble attack, but while more than one had observed the infestation, none had followed out the round of life with any accuracy. This failure to make detailed notes or drawings of the various stages in the life-history of the fly resulted from the feeling that all must already be well known, and thus specimens which, if preserved, would have been the means of determining the species, have failed to be preserved or have been deliberately destroyed. There must be many readers of the VETERINARY JOURNAL who are well situated for observations of Horse-Warble attack, and in the hope that such observations may lead to the clearing up of the identity of the attacking species, I take the liberty, with Miss Ormerod's permission, to give a *resumé* of her letter. The attack is fairly well known in such Continental countries as are washed by the North Sea, while Miss Ormerod has had notes of it from some two dozen places in England mostly near the sea. The maggot was found at various dates from the middle of April to the end of July. The number of warbles on one horse generally one or two.

The warbles are found on neck, flank, quarter, and back. Miss Ormerod goes on to say that what is most needed for identification of the species is firstly to secure a few specimens of the full grown maggot, "no description of the full grown maggot having yet been published and none at all of the fly." "The difficulty is to get the full grown maggot at the stage when it is just quitting the warble, in order to change to chrysalis under a clod or some shelter, for if it is squeezed out it may be injured or the time not come when it is ripe for change." As to how to secure the full grown maggot without injury Miss Ormerod writes, "The best plan is to make a little bag and fasten it by anything sufficiently tenacious on the coat of the animal, over the warble hole, so that when the maggot comes out it will fall into the little pouch and be secured. Just a little circular bit of muslin, with a stout thread run along the outer edge and then drawn up so as to give it a bag form, answers well." Should any observer be successful in rearing the maggots to the pupation stage, for further development warmth seems favourable. "One chrysalis which was kept in a temperature of 100° Fahren. developed the fly in 27 days" (unfortunately the fly was not preserved). Miss Ormerod's magnificent services in connection with true Ox-Warble attack are well known and doubtless many will feel anxious to help her as far as they can in settling the Horse Warble difficulty. Any specimens sent or accurate observations recorded will be duly acknowledged and full credit given.

NEW INVENTIONS.

New and Improved Form of Chloroform Muzzle.

Patented.



The above illustration shows a new form of Chloroform Muzzle recently made by Messrs. Arnold and Sons, at the suggestion of a member of the profession, who sends the following description :—

Having cast and secured the horse, remove the cap and put the muzzle on the upper jaw, the edge opposite the rubber tube and stop cock, being in the horse's mouth. Fit the head strap behind the ears, and then proceed to blow up the pneumatic pad with the brass pump until the upper edge of the muzzle fits the horse's face; being careful not to make it fit so close as to compress and occlude the nasal chambers.

Now attach the cap to the lower button on the muzzle, place the chloroformed sponge on the wire grating, and close the cap, leaving the sliding ventilator open. Should the horse struggle a great deal, undo the top button and let air in under the cap. After the horse is once under the influence of

the chloroform, the cap and ventilator should be closed, as he will get plenty of air through the mouth, the soft palate having become paralyzed.

The tongue should always be held by the assistant, as it is apt to become lacerated by the teeth when the horse is coming round, and it always acts as a good index of the stage of anæsthesia that the animal is in.

Legal News.

VETERINARY SURGEONS CHARGED WITH CRUELTY.

BEFORE Mr. Stipendiary Atkinson, at the Leeds Town Hall, on Thursday, November 7th, a charge of cruelty to a horse was preferred against James Brand and Henry Getling Bowes, who carry on practice as veterinary surgeons in Leeds. Mr. Stansfield (barrister) appeared to prosecute on behalf of the Royal Society for the Prevention of Cruelty to Animals, and Mr. H. A. Child was for the defence.

In his opening statement, Mr. Stansfield explained that the charge against the defendants was one of having caused to be ill-treated a bay gelding which, suffering from mange, had been sent to them for treatment. The animal remained in the care of the defendants at their premises in Hunslet from September 21 to September 28, and on the morning of the latter date was so weak that he had to be raised by means of a sling attached to two coal carts. At six o'clock in the same evening, however, the defendants directed their stableman, named Rhodes, to take the animal to Thorpe Hall, a distance of $4\frac{1}{2}$ miles, but on reaching Thwaite Gate, half a mile away, the horse dropped down in the road. Rhodes endeavoured to move him, but he only stumbled and pitched forward headfirst. Rhodes then tried to raise the horse by means of a plank, but was stopped by two policemen, and Inspector Jowett, of the Royal Society for the Prevention of Cruelty to Animals, was sent for. He found the animal in the last stage of exhaustion, and it being impossible to raise him he was subsequently, by Mr. Brand's orders, pole-axed in the roadway.

Charles Marshall Rhodes, the stableman, said that when he visited the horse at 7.30 a.m. on the 28th, he found him lying with his legs entangled with the post supporting the manger. He sent for Mr. Bowes, and whilst he was fetching some straw, the horse was moved from the stable into the middle of the yard. There he was raised by means of a sling, and witness walked him about for 20 minutes or so. Later in the forenoon he exercised the horse in the streets.

Police-constable Gale, who, with Police-constable Hall, came on the scene shortly after the horse had stumbled, described the efforts of Rhodes to raise the animal. The man eventually got a plank, with the object of getting the horse up, but witness and the other constable stopped him. The horse, added witness, seemed very weak. Police-constable Hall gave similar evidence.

Inspector Jowett said that when he reached the place where the animal was lying he immediately examined the animal. He was lying on the near side, with his shoulders in the gutter and his head on the kerbstone. He was then in the last stage of exhaustion, and was perfectly motionless. The body, legs, head, and neck were all covered with mange scabs. After the defendants arrived a float was secured, but witness pointed out that it would be impossible to get the horse into it alive without putting ropes round him and hauling, and said he should not allow this to be done. Mr. Brand said: "I'm in charge here, and shall give what instructions I like," and witness replied, "Excuse me, *I'm* in charge here as a police officer, and I

shall not allow the horse to be hauled by ropes." Some men then attempted to lift the horse into the float, but this was found to be impossible. The head was got on to the tailboard of the cart, and whilst in that position the animal's lip dropped. Mr. Brand, on seeing this, shut the lip up again, and ordered that the float should be taken away and the horse killed.

Mr. F. SOMERS, M.R.C.V.S., Wade Lane, Leeds, said he was called to Thwaite Gate to see the horse about nine o'clock. The gelding was then much distressed and exhausted, and was covered with mange. His condition was poor, and there was a wound on the right hip, and another over the right eye. The pulse was weak. He was present at the *post-mortem* the next day, which revealed that the horse had suffered from disease of the heart.

Have you any reason to give us why the animal would be unable to get up?—He would be unable to do so from exhaustion, accompanied by the disease of the heart.

Having regard to the fact that the horse had to be raised by mechanical means in the morning, would he, in your judgment, be fit to travel 4½ miles in the evening?—Certainly not; and I should have anticipated the probability of his coming down.

Cross-examined: The fact that the horse ate food eagerly that day did not necessarily prove that he was healthy.

Was it a proper way to get two carts and improvise a sling to raise a horse in the yard?—I don't say it was improper, but I should not have done it.

What would you have done?—Well, seeing the condition of the horse, I should have fetched a pole-axe and killed him, and without thinking twice about it.

Further cross-examined, witness said that, assuming Rhodes's evidence to be strictly accurate, and if the horse had been able to walk on one occasion during the day for twenty minutes, there would be no reason why the animal should not have walked in the evening.

Mr. WILLIAM PRITCHARD, late Professor of the Royal College of Veterinary Surgeons, said he had listened to the previous evidence, and under the circumstances he was of opinion that it was an act of cruelty to call upon this horse to walk four miles on the date in question.

Cross-examined, he insisted that if the horse had been down in the morning, and had had to be raised mechanically, it was not proper to expect him to walk four miles the same day.

Mr. ROALFE COX, Fellow of the Royal College of Veterinary Surgeons, bore out the statement of Mr. Pritchard to some extent, but would not commit himself to the statement that it would have been cruelty to send the horse a distance of 4½ miles. He said it would been simply an "error of judgment," and even went so far as to add that the horse might have accomplished the journey without pain.

This concluded the case for the prosecution, and the STIPENDIARY, without calling upon the defence, intimated that he was not satisfied, after hearing Mr. Cox, that the charge of cruelty had been made out. The case against Brand, which had been dealt with, was accordingly dismissed, and that against Bowes was then withdrawn by Mr. Stansfield.

Mr. CHILD applied for costs, describing the prosecution as a perfectly groundless one, and dwelling upon the injury it was calculated to inflict upon his clients professionally.

The STIPENDIARY refused the application, but remarked that if the action had been a civil one he would have granted costs, and also assured Mr. Child that as the result of the proceedings no reflection whatever rested upon the defendants.—*Yorkshire Evening Post.*

Army Veterinary Department.

Vety.-Lieut.-Col. C. Clayton arrived from India 6th ult., and is appointed District Veterinary Officer for Ireland.

Vety.-Captain E. H. Kelly has been restored to full pay, *vice* Vety.-Captain H. Wilkinson, deceased.

Vety.-Captain J. Finlayson joined at Woolwich for duty on 12th inst., from leave of absence.

Vety.-Captain T. Joslen, embarked for a tour of service in India on 13th ult.

Veterinary-Major G. J. R. Rayment and Veterinary-Captain E. Taylor are on return from the Chitral Relief Force posted to Rawal Pindi for duty.

Veterinary-Captain J. Cooper has been moved from Rawal Pindi to Lucknow for duty.

Veterinary-Lieutnant H. L. Sawyer is posted to Peshawur for duty on return from the Chitral Relief Force.

Veterinary-Major J. C. Berne arrived from South Africa on 21st ult.

Veterinary-Lieutenant T. E. W. Lewis arrived from India on 21st ult.

These officers have been granted one month's leave of absence, and will be posted to Woolwich for duty on termination of above leave.

Veterinary-Captain J. Finlayson has been transferred from Woolwich to Dundalk, for duty with the 13th Hussars, vice Veterinary-Captain J. A. Braddell, who will shortly embark for India.

Extracts from Foreign Journals.

CHLORIDE OF BARIUM IN CASES OF COLIC.

THE following are selected from a list of 51 cases treated at the Veterinary College, Berlin, by Dr. Dieckerhoff and his assistants in July and August of this year :—(*a*) A fourteen-year-old cart-mare of middling size had been suffering for some hours with colic and was sent to the college for treatment ; showed great suffering, rolled about and groaned. No indications of peristalsis, abdomen slightly inflated, maxillary pulse 58. Treatment : intravenous injection of chloride of barium 1 gramme (?) in 10 grammes of distilled water. This began to take effect in five minutes, mare raised her tail, strained at the rectum and voided dry balls of fæces ; slight increase of colic symptoms ; 10 minutes later wind is passed and a quantity of soft and pulpy fæces ; in two hours patient is quit of all her trouble. (*b*) A seven-year-old van-horse had been suffering for several hours from colic and had been treated by a surgeon with 1 gramme eserin. sulph. but without relief. Abdomen inflated like a barrel ; percussion of abdominal walls produced abnormally loud sound, auscultation revealed ringing noises, breathing difficult, pulse 65. Veins of the neck stood out distinctly, mucous membranes very red. Patient moved with difficulty and indicated severe trouble by his staring look and his groaning. Treatment : Chloride barium intravenously, 5 gramme in 5 grammes distilled water. Immediately after injection the animal raised her tail and in a few minutes great quantities of intestinal gases were expelled ; this went on, with short intervals, for more than 30 minutes, and defecation took place in 35 minutes ; the flanks resumed their normal condition, and in one hour the animal was restored to his ordinary state of health, and was sent home cured four hours later. (*c*) A heavy cart-mare was brought in, suffering from colic which had suddenly set in after an extra large feed of maize and beans.

Patient was wild with pain and rolled about on the tan-covered floor of the operating-hall, groaning loudly and screaming and paying no attention to voice or even whip. She dashed her head and limbs recklessly against the walls of the place. A careful examination of this maddened animal was of course impossible, but it was determined to give an injection of 1.25 gr. chlor. bar. in 10 gr. of distilled water intravenously; as the animal was never still for a moment, this was very difficult, but at last the efforts were successful. The result was most striking; in six minutes defecation began, and it was repeated at short intervals, and the mare became quieter. It was now possible to examine the abdomen, and this showed that peristalsis was going on vigorously. The patient left next morning quite well. (*a*) A nine-year old heavy cart-mare had been suffering for 11 hours from colic, and was brought to our College. Pulse 40, breathing 16. Intravenous injection of chlor. bar. 1.25 gr. in 10 gr. dist. water. Immediately after injection, the animal shook her head violently, and moved her jaws as if chewing. In five minutes hard fæces were discharged; then the mare laid down, rolled about once or twice, and then remained lying flat on the ground. Sometimes she looked round at her belly, drew in her legs towards her body, and lashed her flanks with her tail. Auscultation showed that only intermittent intestinal sounds were present. No improvement takes place within six hours (pulse 44, breathing 18), and a second intravenous injection was given to the mare as she laid (·75 gr. in 10 gr. dist. water). Shortly after the injection the animal rose, walked about the stall, and then, with great straining at the rectum, discharged large quantities of pulpy fæces. Peristalsis audible on both sides. Three hours later the mare was discharged cured. (*e*) A bay gelding, 12 years old carriage horse, which had been suffering from colic for seven hours, received at 2 p.m. an intravenous injection of ·75 gr. of chlor. bar. in 10 gr. of dist. water. In two minutes defecation commenced, accompanied with discharge of gases. Patient laid flat on the ground, and remained there quietly. Peristalsis very vigorous, and distinctly audible at five paces from the animal. In $1\frac{3}{4}$ hours the patient rose, discharged a great quantity of pulpy fæces, and began to eat his fodder. He was discharged same afternoon cured. (*f*) A 15-year-old light cart gelding was brought to the College with the report that he had been suffering for two days from colic, and had been treated for that trouble. The patient, a poorly-fed animal, lay on the ground, and indicated by frequently striking his belly, and by turning his head round to gaze at it, and by constant groaning, the severe pain which he was suffering. There was no peristalsis, abdomen greatly distended, maxillary pulse 86 and thready, breathing 30, temperature 105° Fahr., conjunctiva dark red. A subcutaneous injection of ·1 gramme Eserinum sulph. was administered, but no apparent effect was produced. Patient's strength was declining; he could not now get up and his eyes were staring. An hour later an intravenous injection of ·5 gr. chlor. bar. in 5 gr. dist. water was given. Colic symptoms increased, but patient voided small quantities of bright green, watery fæces; there was straining at the rectum, anus remained open; a little later there was an outbreak of sweat and a trembling of the muscles. Death took place in the evening. *Post-mortem* showed *volvulus jejuni*, rupture of the jejunum, and peritonitis. (*g*.) A ten year old light-van mare was brought to the College, suffering from severe colic, produced by a journey of 28 miles at a rapid pace. Auscultation of abdomen revealed ringing sounds in great and small intestine. Pulse 80, scarcely perceptible. Treatment: 5 gr. chlor. bar. in 5 gr. water intravenously. In 12 minutes normal intestinal sounds are heard, which gradually become general, and, in half-an-hour are audible 3 paces from the mare. She grew quieter by degrees, and one hour later discharged pulpy fæcal masses. Next morning she showed no signs of disturbance beyond the swelling of her

limbs caused by over-driving. (*h.*) A Belgian gelding, 12—14 years old, had been ill with colic for nine hours, and had been treated for that ailment. An intravenous injection of 1·25 gr. bar. in 10 gr. water was given, and took effect in one minute. In five minutes after there was a discharge of dry fæces, followed in 20 minutes by pulpy excreta. Peristalsis audible on both sides. Patient strained sometimes at rectum, but in the intervals, when he was free from pain, ate green fodder with appetite and drank water. Next morning he was quite well.

The hospital surgeon who reports these cases summarises thus :—In addition to the 51 cases of colic treated with chlor. bar. there were seven treated, purely on account of external circumstances, with eserinum sulph. Of these latter cases six turned out successfully, whilst one horse died of incurable involution of the small intestine. Of the 51 cases treated (within a month) with chlor. bar. 45 were quite successful; in the remaining six cases the colic was complicated with incurable conditions of the gastro-intestinal tract, such as rupture and involution, but these conditions preceded the administration of the barium; the result of all our observations is distinctly that barium, whether given internally or intravenously, in no way tends to the production of ruptures, either of the stomach or intestines. It is of the utmost importance that the surgeon should regulate his dose of barium exactly in accordance with the whole case, more particularly with regard to the weight and age of the horse; further, he must take note of the heart and observe if there is any weakness there. At the same time the surgeon must not hesitate to give a large enough dose to insure a satisfactory effect.

ERYSIPELAS IN THE HORSE.

Professor Semmer, of St. Petersburg, writes to the *Berliner Thierärzt. Wochensch.*, as follows :—Last February when the cold was so intense (the temperature ranging from 10 degs. above to 17 degs. below zero in Fahr.), a consignment of trotting horses arrived in St. Petersburg from a breeding establishment on the Volga. The animals had travelled some 625 miles (English), mostly by rail. Immediately after arrival three of the male animals turned ill with swelling of the lips, cheeks, and neck, and all three died. A quantity of the clear, serous exudation, taken from the swelling was used for inoculating a rabbit, a guinea-pig, a cat, and two mice, but produced no effect. The *post-mortem* examination of the horses showed as follows :—In the abdomen, thorax, and pericardium, a dirty red fluid, head and neck swollen by an accumulation of sero-fibrinous, partly fluid, partly congealed exudation in and under the skin, which in some parts formed a layer an inch and a-half thick; pleura, pericardium, and peritoneum, showed reddish spots and streaky injections, and were partly covered with dots of blood; considerable extravasation of blood in the mesentery and all round its glands, also under the pleura; lungs and intestines normal, liver and kidneys yellowish, on the point of fatty degeneration; spleen greatly enlarged and full of blood; in the skin-exudation a few staphylococci, in the serous outflow from thorax and abdomen, a number of streptococci and short bacilli. Inoculation of the exudation in a horse had a negative result, and so had the inoculation of cultivations grown on gelatine. On the other hand inoculation of the staphylococci (cultivations on potatoes) produced erysipelatic swellings in a horse, and death in a guinea-pig. Evidently the horses had on the road to St. Petersburg, and whilst suffering under the influence of cold, infected themselves on the lips with virus, and the inflammation had spread to the serous membranes and so caused death.

A NEW INSECT-PLAGUE.

Newspapers have recently reported from Africa a new plague in the shape of

an insect which, they say, threatens havoc to domestic animals there, and is almost as bad as the tsetse-fly. This is the *sarcopsylla penetrans*, or sand-flea. This troublesome parasite, which is said to have become known to the Spaniards so long ago as the sixteenth century, when they took possession of Central America, and to have given them a great deal of trouble, was conveyed by traders from its American home to Africa, and in the first instance to the Portuguese possessions there in Central Africa. Apparently it has gone on spreading, and now it is on its way through the Congo State to German Africa. Undoubtedly the sand-flea is a very troublesome insect, but more so for men than for beasts; at any rate, it is not to be compared with the tsetse-fly. Wissmann, in his book on parasites, speaking of the sand-flea, says that it is conveyed from place to place only by traders; further, that the negroes have a great dread of it. It penetrates into the skin, causes very painful and finally purulent swellings, and it may bring about the loss of the toes, one by one, but it is quite harmless if, when the swelling begins to show itself, the insect is removed therefrom with a needle. Its worst efforts are not, like the sting of the tsetse-fly, fatal; it produces only local morbid processes, and for animals it has no serious importance.

REMOVAL OF AMMONIACAL SMELLS FROM STABLES.

THE German magazine *Das Pferd* (The Horse) recommends for this purpose the use of shavings that have been soaked in vitriol and (40 per cent. of) water. The shavings to be scattered about the stable. The vitriol combines with the ammonia to form sulphate of ammonium. Chloride of calcium has the same effect, but the chlorine thus produced has a still unpleasanter smell.

THE FAUNA OF CARCASES.

THE French surgeon Mégnin, in a monograph recently published by him, states that insects which infest a carcase do so in a prescribed order, so that from the presence of certain insects one can tell the time that has elapsed since death. On a carcase lying exposed to the air one finds first the flies which remain till the formation of sebacic acids. A second series of insects arrive as soon as the corpse-smell is established. A third, three to six months after death, on the development of the sebacic acids. Altogether, we find eight distinct relays of insects before destruction is complete, and after the last have gone there is nothing but the bones left.

SWEAT IN INFECTIOUS DISEASES.

PROFESSOR QUEIROLO, of Pisa, has been making experiments by injecting the sweat of human beings into rabbits. The sweat of healthy men had no effect on them, but, on the other hand, the sweat of men suffering from small-pox, typhoid fever, or malaria, even when injected in smaller doses, caused death in all the rabbits within twelve to forty-eight hours. Dr. Queirolo proves that death was due not to infection, but to intoxication (that is, to certain poison elements which had been contained in the sweat), by the fact that he instituted further experiments with sterilised sweat, and that this sterilised sweat, when it came from healthy men, was harmless, but deadly when it came from sick men. A further result of these interesting experiments was that the toxicant power of equal quantities of sweat stands in direct relation to the malignity of the disease; rabbits infected with sweat from patients suffering from severe malaria died, whilst those infected with sweat from patients only slightly affected with the same disease, escaped with their lives.

WHAT AN OX CAN STAND.

VETERINARY SURGEON SCHULTZ writes to the *Wochensch. für Thierheilk.* as follows:—I was called out at 10.30 one night to attend a heavy ox which was

suffering from severe colic and watery diarrhœa. It appeared that a few days before the weather being very rainy, the animal had given signs of something being wrong with its digestive organs. Its ignorant owner had thereupon in the course of two days, administered eight pounds of sulphate of magnesia (epsom salts) and ten pints of camomile tea! The animal was suffering from salts-poisoning. Ordered linseed-meal, mucilage, and proper diet, and next day the animal was quite well.

RUPTURE OF THE DIAPHRAGM IN A HORSE.

We translate the following from a Spanish Journal, *La Revista de la Facultad de Agronomia y Veterinaria*, published at La Plata, in the Argentine Republic:—On the 23rd August of this year a horse was brought to us suffering severe colic pains. As soon as he arrived he lay down in a heap on the ground, dashed his head against the wall, rolled from side to side, and then, after this wild action, lay still for a time with his four feet in the air. His pulse was weak, almost imperceptible; respiration very fast, flanks distended, profuse sweat. We made examination *per rectum*, to discover the condition of the bladder and the posterior parts of the intestine, but found nothing abnormal in these regions. We made also an examination of the inguinal canal; there was no strangulation of the intestine in this region. It was necessary to adopt prompt and energetic treatment, as there certainly existed an organic lesion of a serious kind in the belly of the animal. We gave him therefore two hypodermic injections of sulphate of eserine (5 centigrammes=$\frac{3}{4}$ grain), with an interval of one hour. Croton oil was administered internally in doses of 1 gramme ($15\frac{1}{2}$ grains) three times with intervals of an hour. We applied double Belgian fire on the belly and did not spare clysters of soap and water, but we could not save the animal. The *post-mortem* showed that our efforts had been useless, as we found a rupture of the diaphragm of considerable extent and acute peritonitis following thereupon.

THE SPAYING OF MARES.

Writing to *La Revista Veterinaria*, of La Plata, Dr. Julio Lejeune says:—"This operation has been frequently performed with success in cases of nymphomania. The best plan is to operate on the mare whilst standing, care being taken to secure the hind legs with hobbles. A twitch is applied to the upper lip to keep the animal quiet. The operation consists of four parts:—(*a*) incision of the vaginal wall, (*b*) seizing of the ovaries, (*c*) removal of the ovaries, (*d*) suture of the vaginal wound.

(*a*) The mare being in a fasting condition, we make a longitudinal incision in the middle of the upper wall of the vagina, at the distance of 5 centimetres (=2 inches) from the cervix. This incision is the ticklish part of the operation, as, when making it, the operator runs the risk of cutting either the posterior aorta or the vena cava, or its principal divisions, especially if the mare makes frequent expulsive efforts. In order to avoid this—which always means the death of the animal—we have invented an instrument sufficiently sharp to sever the coats of the vagina, but not to injure the above-mentioned blood-vessels. Practice has shown that this instrument fulfils all the requisite conditions. We divide the mucous and muscular coats of the vagina with this instrument; the peritoneum we perforate with our forefinger by a sharp jerk; the solution of continuity is extended by one hand. It will be seen that by operating in this way it is not necessary to lower the uterus, which is such a trouble to the operator. (*b*) The ovaries are very easily found, suspended from the anterior extremity of the broad ligaments. (*c*) The removal is effected by means of a Chassagnac *écraseur* and does not present the slightest difficulty. (*d*) We are of opinion that a stitch in the centre of the wound is bound to be of great use in prevent-

ing the development of serious peritonitis ; we take a curved needle with a disinfected thread and push it from the outside inwardly through the right lip of the vaginal cavity, we then pass it in the inverse direction through the opposite lip, and then withdraw it ; then with the two ends of the thread brought outside we form a simple knot ; an assistant takes one end of the thread, the operator the other, and the two are fastened firmly together, the ends are cut off, and the operation is at an end. We give a sketch of the instrument used, showing its form and dimensions.

CARDITIS AND PERICARDITIS IN THE HORSE.

Veterinary Surgeon Engel contributes the following to the *Deutsche Thier. Wochensch.* :—A ten-year-old gelding had received a blow on the left side of the breast, the *anconæus longus* being specially affected. The swelling consequent thereon subsided in 14 days, the horse became quite lively and was set to work again on the 1st of August. On the 9th, however, it suddenly collapsed and died. The organs of the thorax were very pale. The pleural sinuses contained 12 litres (= $2\frac{1}{2}$ gallons) of partly coagulated, partly fluid blood. The fifth and sixth ribs were broken, and the fractured end of the fifth pointed to the free space of the thorax ; upwards from this fractured end was found a roundish opening in the pericardium. The edges of the opening were thickened, and the whole pericardium had the thickness of 1 centimetre (= ·39 inch); it was filled to overflowing with dark-red coagulated blood. Opposite this opening the epicardium was dull and thickened, and in the inside of this there was found a cavity, of the size of a pea, leading to the heart-muscle close to the coronal vessels of the heart. Apparently the fractured rib had, on the day of the accident, made a wound in the pericardium but had probably become, so to speak, soldered to the place. This "soldering" had become loosened when the horse re-commenced his work.

Correspondence.

TUBERCULOSIS IN CATTLE.

To the Editor of "The Times."

Sir,—The question of tuberculosis in cattle and the danger, which is admitted by the leading authorities to exist, of the disease being communicated from them to human beings as phthisis or consumption, is certainly one most pregnant with interest to every section of the community. An additional interest in the matter was created at the recent meeting of the Scottish Chamber of Agriculture in Edinburgh, held for the special purpose of discussing with the new President of the Board of Agriculture (the Right Hon. Walter Long) urgent public questions calling for legislative consideration. Principal Williams, of the New Veterinary College, Edinburgh, proposed that "tuberculosis be included in the statutory schedule of infectious diseases, and that compensation be paid to the owners of cattle affected with tuberculosis, when such cattle are slaughtered in the public interest," or, as Mr. Long put it, "the Board of Agriculture was asked to include the disease in the schedule under the Contagious Diseases (Animals) Act."

A brief statement of the opinion of the scientific world, with regard to the disease, served as a preface to by far the most important matter touched in the day's proceedings—viz., a thoroughly practical means of stamping out the disease at a relatively moderate cost to the country. As it stands, it is the only feasible proposal in this direction which has been made. Principal Williams explained that Koch's discovery of tuberculin had rendered the detection of the disease by inoculation a certain and an easy matter, while

Professor Bang, of Copenhagen, had conducted during a number of years a series of experiments on an extensive scale which went to show that calves dropped by tuberculous cows could be reared in a perfect health on milk from tuberculous cows, provided the milk be boiled and the animals be kept away from danger of contamination such as would occur if they were permitted to run with those suffering from tuberculosis. The fact, stated from his own wide and varied experience, that tuberculosis is infinitely more prevalent among cattle than it was twenty years ago, makes the question from the sanitary point of view, in the interests of public health, one of increasing magnitude. The nature of the disease amply justifies the belief that it will go on increasing at an accelerated pace on account of the increased danger of contamination from an increased number of diseased animals. Although it is, to some extent, an agricultural or producers' question, it is to a far greater and far more significant degree a question affecting the general public—the consumers. The agriculturist may suffer from the pecuniary point of view to a limited extent, but of infinitely greater moment is the question of health—the question whether an ever-increasing risk is to be run of contracting through the consumption of milk and meat a most insidious and incurable disease. If public sentiment were roused to a full appreciation of the actual facts of the case, the remedy, at whatever cost, would not be long delayed in its application.

It is not our object to urge the adoption of hasty and extravagant means when simple, inexpensive, and equally suitable means are possible. The proposal made was (1) to compulsorily inoculate all suspected herds with tuberculin twice annually; to separate those which gave the reaction and keep them entirely apart from healthy stock, and at the same time to destroy all unthrifty diseased animals; (2) the flesh of all cattle which appeared healthy, although known to be derived from an animal which responded to the tuberculin test, to be sold as human food, if on examination by a competent veterinary expert it were found to be in a condition which would enable it to pass the sanitary market-inspector at the present time. This may possibly shock some people who are particularly sensitive, but it is not proposed to offer for sale the carcass of any animal which would not by present regulations go into consumption. Moreover, with a knowledge of the existence of tuberculosis in the carcass a more thorough inspection could be enforced which would lead to the rejection of all those generally diseased. Tuberculosis is seldom found in the flesh, and where there is only slight affection, as in the early stages of the disease, the danger to human life is reduced to a *minimum.*

All the compensation which the Government would be called upon to pay would be—(1) the value of condemned cattle, and (2) the difference between the original value and the forced sale value of all going into consumption that were slaughtered in the public interest. Mr. Long advanced two objections to this scheme—viz., the large sum of money that would be required for compensation and the difficulty of carrying it out in the case of small holdings where accommodation for isolating the diseased animals did not exist. Both were practical objections, and both worthy to be raised by a responsible Minister; but, in such a case as this, amounts of expenditure must be regarded in the light of the proportion they bear to the amounts required to carry out alternative schemes, and the means to be tried must be considered along with the results to be achieved.

The position is simple enough. With a great social problem before us—probably the most important and far reaching in the interests of public health which has come up since Jenner solved that of vaccination for smallpox—are we to ask how many human lives—our own probably among the number—we are knowingly year by year to sacrifice so that the British taxpayer may be

relieved of the expenditure of a few hundreds of thousands of pounds, or that the smaller class of cowkeepers shall be saved from a slight temporary inconvenience?

The question is not one that can be shelved; it must be grappled with, and that before long. Therefore, to reject this scheme is tantamount to giving preference to some other.

The only other scheme which appears at all possible is to give compensation for the slaughter of all animals found to yield to tuberculin inoculation and prevent all such meat being used for food. This would necessitate the expenditure of at least four or five times the proposed sum for compensation involved in Principal Williams's scheme, unless it be determined that the distressed agriculturist, in the interests of the health of the community, should be well nigh ruined by receiving only partial compensation for his loss.

Edinburgh University. ROBERT WALLACE.

RE PROSECUTION OF BRAND AND BOWES FOR CRUELTY.

To the Editor of the VETERINARY JOURNAL.

SIR,—I should like, with your kind permission, to make a few remarks on the above case, in which Mr. Brand and myself were the defendants.

I do this because the case, having been dismissed without calling on the defence, it is possible there may be some misunderstanding about it, which we had not the chance of clearing up at court.

I should like to state at the outset that I have no hesitation whatever in saying that the whole prosecution was based on a gross misrepresentation of facts, and I will endeavour to prove this by giving you, as briefly as possible, the evidence of our witnesses, in contradiction to that of the witnesses for the prosecution.

In the first place, the prosecution stated that the horse had only travelled half-a-mile when it fell, but, on being cross-examined, their witnesses allowed that it might be even as much as a mile and a quarter. My own opinion is that it was quite a mile and a half. The importance of this point will be seen when I mention that it took the horse only twenty or twenty-five minutes to go that distance, for there certainly would have been something wrong with the horse if it could only go half-a-mile in twenty-five minutes. That is one instance of their misrepresentation of facts

Then Inspector Jowett and Mr. F. Somers both tried to throw the responsibility of destroying the horse on to Mr. Brand. This Mr. Brand denies, and although I was not myself present at the time, and therefore cannot say anything personally one way or the other, we had four witnesses who were present at the time who heard Inspector Jowett say, when Mr. Brand was going to get the horse on to the float, that he was in charge of it and would not allow it to be pulled on to the float, and also heard Mr. Somers say the horse would have to be destroyed. I, myself, can vouch for the fact that after it was killed Inspector Jowett rode on the knacker's cart to their yard and left orders that the horse was not to be touched by anyone until he and Mr. Somers came to make a *post-mortem* the next morning. The next morning Mr. Bowman, Mr. Brand, and myself had to wait three-quarters of an hour for Inspector Jowett and Mr. Somers, as the knacker would not let us touch the horse until they came; so that looked as though we had not much say in the matter.

As to Mr. Somers' evidence he was very emphatic in asserting that this was a case of cruelty, but on being cross-examined he allowed that if the man Rhodes' statement, as to the horse having been walked about several times in the day were true, then there was no cruelty; at the same time he maintained that from his professional knowledge he knew the horse was not in a

fit state to walk 4½ miles after being cast in his stall in the morning. This I take it means in plain language, that he did not believe Rhodes' statement. I can only that I am very sorry to see that any Veterinary Surgeon, for the sake of a paltry court fee, would go so far out of his way to secure a conviction against other Veterinary Surgeons, for, seeing that the prosecution was based principally on Rhodes' statement and that his evidence was absolutely all they had as to what took place prior to the horse slipping on the street, I consider that Mr. Somers had a good cheek to try to lead the magistrate to believe that part of that statement was not true. As a matter of fact we had three witnesses besides ourselves to prove that, after the horse had been raised in the morning, he walked away with very little stiffness, and was walked about several times during the day for quarter-of-an-hour at a time and they also saw him leave the yard at night walking quite well.

Rhodes stated that the cause of the horse falling was that he was cannoned by another horse in the street, and the horse making a plunge forward slipped on an iron grating and fell, and Rhodes was prevented from getting him up by the two detectives who came on the scene and would not let him assist him to rise.

Another point in Mr. Somers' evidence was that the horse could not rise on account of exhaustion and heart disease, and yet on cross-examination he allowed that the disease of the heart was so little that it would not likely have been discovered during life. I might here mention that the horse was examined, *post-mortem*, on our behalf, by Messrs. Bowman & Lane, of Leeds, Mr. Carter, Senr., Mr. Bradford, and Mr. Scriven, Tadcaster, all of whom were of opinion that the horse was in very fair condition and perfectly healthy with the exception of a slightly enlarged heart, such as would be found in hundreds of horses working daily on the streets of our large towns.

Mr. Somers also stated, in cross-examination, that he would have pole-axed it in the morning on finding it cast in its stall, and not thought twice about it; now I put it to anyone, "What would our clients think of us if we pole-axed every horse that got cast in his stall, even if he had the mange in addition?" I should like to suggest to Mr. Somers that if Sir Visto could get up and win the St. Leger after being cast in his box, surely this horse might be asked to walk 4½ miles under similar circumstances. And then as to the horse not being able to rise after being liberated in the morning; why! the stiffness after lying in a cramped position for several hours would be quite sufficient to account for that, especially in a narrow stall.

As to the evidence of Mr. Pritchard, I can only describe the action of a veterinary surgeon who will come down to give evidence against other veterinary surgeons on a criminal charge, without knowing anything whatever about the case, and persist in calling it an act of cruelty in the face of all evidence, as contemptible, and I can only say that I think a more flagrant breach of professional etiquette it would be difficult to find. As to Mr. Cox, I have a certain feeling of respect for him, as he was too conscientious to persist in calling it cruelty, but allowed that if Rhodes' statement were true, there was no cruelty whatever, and it was, in fact, in a great measure due to his evidence that the case fell through. In conclusion, I can only express my indignation that such cases should ever be taken up by a society which is instituted for such a good cause as the prevention of cruelty to animals, and also that when they are taken up, members of our profession should knowingly give evidence against brother practitioners in such trumpery cases.

On behalf of Mr. Brand and myself, I should like also to thank those members of our profession who so willingly came to our assistance, though, happily, their evidence was not needed to clear us of this charge.

Apologising for intruding so much on your valuable space, I remain, yours truly,

H. G. BOWES,
Pro BRAND & BOWES.

THE JUBILEE MEMORIAL.

To the Editor of the VETERINARY JOURNAL

Dear Sir,—In begging the favour of the insertion in your next issue of the enclosed list of subscriptions to the Jubilee Scholarship Fund, I should like to intimate to intending subscribers and to those gentlemen who have not yet forwarded their promised donations that the fund will be closed on January 15th, 1896. Contributions should be sent to the Treasurer, Mr. F. W. Wragg, 17, Church Lane, Whitechapel, E.

Yours faithfully,

J. MACQUEEN, *Hon. Sec.*

Royal Veterinary College, London, N.W.

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November 20, 1895.

To the Editor of THE VETERINARY JOURNAL.

Edinburgh, 20th November, 1895.

Dear Sir,—Can you furnish me with any information regarding the Irish Veterinary College that our late Government, before its exit, had arranged to subsidise with the handsome sum of £15,000? Has the distressful country

not taken advantage of the unexampled display of generosity to encourage veterinary education for which it was singled out by the powers that were? The likelihood that you may have sources of information, not available to me, I hope you will accept as my excuse for troubling you.—Yours truly,

INQUIRER.

Notes and News.

SERUM TREATMENT OF TUBERCULOSIS.—Mr. Paginn, Professor of Bacteriology in the Missouri University, argues that as the horse is immune against tuberculosis, its blood serum ought to work beneficently in patients suffering from that disease. He has been using injections in fifty cases, and thinks he has proved its value. He claims that the blood of the horse can be used direct, as it is naturally immune and needs no artificial immunisation. He injects the serum under the skin. (?)

POLITICAL NEWS.—Mr. Charles Moir, Cardiff, our well-known and popular *confrère*, besides pursuing a large and lucrative practice, we are pleased to notice, has commended himself so much to his fellow citizens, that the Conservative Association of that city has selected him to be their chairman. This distinguished honour that has been conferred is a pleasing indication to the profession that not only are we working to obtain scientific prominence, but also social eminence. We feel quite sure Mr. C. Moir will fill the position with great acceptance, and we most heartily congratulate him.

Obituary.

Knowles, Robert, Wisbech, Cambs.	..	April, 1859.
Campbell, Colin, Lyminge, Hythe ..	..	April, 1887.

EDITORIAL NOTE.

THE Editor regrets that a number of valuable contributions, including Reports of the Proceedings of Veterinary Societies, have been crowded out of the present number of the JOURNAL. They will appear in next month's issue.

ERRATA IN REVIEW OF CAPT. SMITH'S VETERINARY PHYSIOLOGY.
November number, page 392:—

Line 2	..	*read* Seyler for Sezler.
Line 9	..	*read* Chauveau for Chauveau's.
Line 10	..	*begins a new sentence.*
Line 19	..	*read* have for leave.

Communications, Books, Journals, etc., Received.

Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); L'Echo Vétérinaire (Liége); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift (Berlin: Richard Schœtz); Oesterreichische Monatsschrift für Thierheilkunde (Vienna: M. Perles); La Revista Veterinaria (Buenos Aires); Revista de la Facultad de Agronomía y Veterinaria (La Plata); "The Journal of Comparative Medicine and Veterinary Archives," Philadelphia; American Veterinary Review; Investigations of Infectious Diseases among Poultry; The Ox, by A. Seyferth, revised by Professor G. T. Brown, C.B.; Transactions of the Highland and Agricultural Society of Scotland, 1895.

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